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Proposed Ore Carrying Rate Not Satisfactory

And Will Be Vigorously Opposed—Pig Iron Buying of Moderate Volume With Prices Low—Coke Producers Control the Market

BY GEORGE SMART

Heavy specifying against contracts for finished materials continues, but pig iron prices are low and demand is limited. It is an interesting question whether prices on leading finished products can be maintained until conditions surrounding primary products improve.

Railway Buying

The United States Steel Products Co. has been awarded 20,000 tons of rails by the Central Railway of Brazil. Receivers of the Chicago & Eastern Illinois awarded 12,000 tons of rails to the Illinois Steel Co. The Baldwin Locomotive Works recently closed with Corporation mills a large contract, involving various finished products. Railroads are buying in a very limited way.

Iron Ore

The proposed rate of 88 cents on ore from lower lake ports to Wheeling and Pittsburgh will certainly be vigorously opposed, especially by interests in Wheeling, where the rate is advanced 28 cents, while the Pittsburgh rate is reduced only 8 cents. Figured on a movement of 15,000,000 tons annually to Pittsburgh and 3,000,000 tons to Wheeling, the net loss to the railroads would be about $300,000. Of this amount, about $200,000 would be sustained by the Steel Corporation's Bessemer road. The movement of ore from the Lake Superior region to lower lake ports is now proceeding at a rapid rate and a new record will probably be made this month.

Pig Iron

Inquiry for pig iron has improved in some sections, but with the exception of the south, where the downward tendency seems to have been arrested at $10.50, Birmingham, for No. 2, prices are still weak and sales are of only moderate volume. A sanitary company is negotiating for 5,000 tons of foundry and gray forge for shops at Pittsburgh and Brighton, Pa. The National Radiator Co. is inquiring for 5,000 tons for its plant at Johnstown, Pa. The Baldwin Locomotive Works has at last distributed about 4,000 tons between northern and southern makers. The Standard Cast Iron Pipe & Foundry Co. has closed for 5,000 tons of No. 3 and forge for July-August, principally with southern makers. The Alton Steel Co. has sent out an inquiry for 4,000 tons of basic and 1,500 tons of Bessemer for its new plant at Alton, Ill. The demand for steel-making irons is extremely limited. A sale of 10,000 tons of charcoal iron by a Lake Superior company is reported.

Prices Concessions

There is very strong competition in wire and the nominal price of 1.80c is being freely cut. On shafting, as low as 62 off has been done. Cutting on sheets continues. Prices on rivets are fairly well maintained. Some further concessions have been made on scrap in some markets, and extremely low quotations prevail throughout the country.

Coke

Coke producers are standing firmly for $2.50 as the contract price for the last half of the year and have succeeded in preventing the shading of that quotation, but have been compelled to blow out a considerable number of ovens. In some cases, furnaces have been compelled to pay even higher prices for prompt coke. Some furnace operators insist that they will soon blow out unless the coke situation improves.

Structural Material

A very fair number of structural contracts, involving large tonnages, have been placed. The tonnage in the east amounted to about 30,000 and an equal tonnage is pending. The Hay Foundry & Iron Works took 3,700 tons for the Hill printing house, and 5,700 tons for the Hollenbeck printing house, both in New York. The Belmont Iron Works has been awarded 5,000 tons for the new plant of the Southern Aluminum Co., at Whitney, N. C. The United States Steel Products Co. took 2,000 tons for a refrigerating plant at Rio Janeiro, Brazil. The Noelke-Richards Iron Works, which recently went into the hands of a receiver, has given up the contract for 9,000 tons for the May Co. building, Cleveland. The steel will be furnished by the American Bridge Co., but the beams for the first section at least, amounting to 2,000 tons, will be obtained from the Cambria Steel Co. The American Bridge Co. has 6,000 tons for the Altman store addition, New York, and 4,000 tons for viaduct work on Pennsylvania lines west.

Iron and Steel Bars

Bar iron mills in the vicinity of New York are competing very aggressively for business and some have quoted as low as 1.25c, mill. Implement makers in the Philadelphia district, who have been closing for their last half steel bar requirements, have placed from 3,000 to 4,000 tons.

PROPOSED ORE RATE

To Pittsburgh and Wheeling Does Not Give General Satisfaction.

Pittsburgh, July 15.—The freight rate on direct iron ore from lower lake ports to the Wheeling and Pittsburgh districts will be 88 cents a ton after Aug. 15, according to an announcement made by carriers with offices in this city today, if the proposed rate is approved by the Interstate Commerce Commission. The proposed rate is 8 cents less than the present rate to Pittsburgh and 28 cents above that to Wheeling. Wheeling consumers undoubtedly will protest.

The new rate follows recommendations June 13, when the Interstate Commerce Commission, in its decision of the Pittsburgh Steel Co.'s complaint against the Lake Shore & Michigan Southern railway, et al., said the rates to Wheeling and Pittsburgh should be equalized, and left this matter to the carriers to determine.

According to exhibits submitted by the Pittsburgh Steel Co., approximately 15,000,000 gross tons of ore are consumed annually in the Pittsburgh district, and 3,000,000 tons in the Wheeling district.

Protests are expected from both Pittsburgh and Wheeling, as it is believed the rate to both districts would be 60 cents. Under the 88-cent rate benefits to independent consumers will be very small. The United States Steel Corporation carries the bulk of its ore on its own lines.

WILL FIGHT RATE

Attorneys For Pittsburgh Steel Co. Issue Statement.

Washington, July 16. (By wire.)—The Baltimore & Ohio filed the Pittsburgh-Wheeling ore tariff of 88 cents this morning with the Interstate Commerce Commission. The Pennsylvania and other tariffs were not filed up to 11 o'clock, but are expected to be filed today and undoubtedly will provide an 88-cent tariff.

Commenting on the 88-cent ore rate to Pittsburgh and Wheeling, filed by the Baltimore & Ohio, Messrs. Ellis and Donaldson, counsel for the Pittsburgh Steel Co., gave out an authorized statement reading in part as follows: "This adjustment is not believed to be in conformity with the spirit of the decision of the commission and steps will be immediately taken to present the matter to the attention of the commission with a view to securing an order compelling the railroads to make such readjustment of ore rates as will accord more substantial relief to Pittsburgh than that proposed."

Rails for Brazil

New York, July 16. (By wire.)—The Central Railway of Brazil has given the United States Steel Exports Co. 20,000 tons of rails. The receivers of the Chicago & Eastern Illinois have ordered 12,000 tons from the Illinois Steel Co. No rail inquiries for next year have been closed.

Contracts for Finished Products

New York, July 16. (By wire.)—Middle western implement makers continue to place last half bar contracts. One buyer has given the Illinois Steel Co. 12,000 tons for last half. The Baldwin Locomotive Works recently closed with Corporation mills a large contract for last half involving various finished products.

Will Build Larger Plant

St. Louis, July 16.—The St. Louis Screw Co. has acquired two city blocks bounded by Luther, Bulwer, Pitman and Prescott avenues, upon which it contemplates the erection of a plant larger than the one it now operates. The company will continue to operate its plant on East Clarence avenue. The new site comprises nearly eight acres, and was bought from the Rock-Island-Frisco Terminal Railway Co. at a cost of $49,200. The officers of the screw company are: Edward J. Miller, president; W. S. Ashton, vice president, and George Gruenewald, secretary-treasurer.

Chicago Cement Show

The seventh annual Chicago Cement Show, to be held February, 1914, will be featured by the conventions of a number of organizations held in conjunction with the exhibition. These organizations include the National Association of Cement Users, the Interstate Cement Tile Association, the National Association of Sand and Gravel Producers, the Illinois Lumber and Builders' Supply Dealers' Association, and the Illinois Association of Municipal Contractors. It is expected that there will be an extensive representation of manufacturers of road machinery and large concrete mixers and concrete-handling apparatus exhibiting.

APPRAISER APPOINTED

And Three Plants in Wheeling District May Be Consolidated.

For the last two or three weeks, frequent reports have been heard that negotiations had been opened to consolidate La Belle Iron Works, the Wheeling Steel & Iron Co. and the Whitaker-Glessner Co., all of which own plants in the Wheeling district, but no official announcement concerning the merger was made until the early part of this week. An official of one of the companies this morning said the proposition has been discussed in an informal way by representatives of the three companies. It is understood that an appraiser has been appointed to estimate the value of the companies and a report from Wheeling says Julian Kennedy, Pittsburgh engineer, is now making estimates.

For the last three or four years, La Belle Iron Works has been named as one of the parties to a merger of independent tin plate companies in western Pennsylvania, Ohio and West Virginia and considerable progress was made last fall when it was believed La Belle company would merge with the McKeesport Tin Plate Co. and one or two of a half dozen other companies manufacturing sheets and tin plate.

Power Company May Be Sold

A decree of foreclosure was ordered in the United States court at Sault Ste. Marie, Mich., July 11, in the case of the Real Estate Trust Co. of Philadelphia against the Michigan Lake Superior Power Co. It calls for the payment by the power company of the sum of $5,285,000 in two days. In default of payment the property of the power company will be sold at public auction.

The trust company was appointed trustee in a mortgage written ten years ago, and since that time the power company has made no payments, it is claimed. The court also ordered the power company to pay interest at the rate of 5 per cent per annum from May, 1903, and costs.

John S. Lawrence, of Grand Rapids, master in chancery, declares that in default of payment there will be a public sale of the power company's property within seven weeks.

The village council of Wadena, Minn., has authorized the purchase of a 200-horsepower direct connected engine and generator for the municipal electric light plant.

INCREASED OUTLAY

Will be Made by the Steel Corporation at Duluth Plant.

New York, July 16. (By wire.)—With the return of President Farrell from his inspection trip up the lakes, an official statement has been made by the Corporation. It will considerably increase the outlay for the improvements at Duluth originally planned and now expects to expend $20,000,000. The most important new construction announced is a new steel dock for Duluth, Messabe & Northern, involving $3,000,000. Foundations are already under way. The American Bridge Co. will fabricate the 36,000 tons of steel required. The steel works of the Minnesota Steel Co., under construction, will be enlarged by an additional $5,000,000, making total cost of $15,000,000. Further extensions include three open-hearths, making ten in all, and some additional merchant mills. The new cement plant under way will cost $2,000,000.

The Corporation has also appropriated $400,000 for enlargement of shops of the Bessemer & Lake Erie, at Greenville, requiring much new machinery. An additional expenditure of $800,000 is being made to the Tennessee Coal, Iron & Railroad plant, spread over a number of units. The report of a structural mill for Ensley is incorrect.

Destructive Fire

A fire which for a time threatened the destruction of an entire plant, consumed several million feet of seasoned lumber in the sill yards of the Haskell & Barker Car Co., Michigan City, Ind., on Sunday, July 13. A revised estimate places the loss at approximately $700,000. The fire was fought by means of salt and dynamite. Engines and hose were also dispatched from Chicago. Aside from loss of time occasioned by the destruction of the lumber, it is not expected that operations at the plant, which employs about 4,000 men, will be interfered with.

Bids Rejected.—The Chicago House Wrecking Co., Thirty-fifth and Iron streets, Chicago, was the only bidder for ehe eight steel beam cranes advertised for sale by the government. The bid was opened at the offices of the Isthmian Canal Commission, but being only $2,000 for all the cranes, it will not be received. The bid is so low that no consideration was given it. It is probable that bids will be asked again at once. The cranes were used in handling concrete during the Panama canal construction.

ARMOR PLATE PLANT

Erection by Government Favored by Secretary Daniels.

Washington, July 15.—Recommending an investigation by congress to determine the practicability of the government establishing its own armor plate factory, Secretary of Navy Daniels submitted to the senate his report on the situation. His action follows the introduction of a resolution by Senator Tillman some time ago.

Mr. Daniels favors the plan of the government building its own plant.

"The cost of a plant capable of turning out 10,000 tons a year," he says, "which is about half of the armor needed, on a two-battleship program, is estimated by the chief of the bureau of ordnance (Admiral Twining) at $8,466,000, and the cost of armor at $314 a ton.

"The estimate of this officer is considerably in excess of the figures given the government by the last board (1906) which investigated the subject. But even at this estimated cost of the plant and the cost of $314 a ton of armor plate, there would be effected a saving of $140 a ton over the $454 now paid.

"On 10,000 tons the government would save $1,400,000. Deducting 4 per cent as the interest on the money used in building the plant, there still remains a net saving to the government of $1,061,360."

It is suggested by Mr. Danials that if the erection of a 10,000-ton factory demonstrates the practicability of the proposed plan the government might erect a duplicate factory on the Pacific coast, thus furnishing the entire supply required for a two-battleship program.

The Cross Engineering Co., Carbondale, Pa., is experimenting with a new type of dry or wet coal shaking screen, which in construction does away with the hanger rods or boards entirely. It has the advantage of taking less room in a breaker or washery than present types.

LARGE NEW PLANT

Of Southern Aluminum Co.—Contracts Being Placed.

Construction contracts for the large new plant of the Southern Aluminum Co., at Whitney, N. C., are now being more actively placed. The Belmont Iron Works has received a contract for the erection of a large tonnage of structural steel for the buildings. While details of the buildings are not yet made public, these will be of very extensive proportions. The Hardaway Contracting Co. has received the contract for the construction of a large dam to cross the Yadkin river and for the power station, which will involve an expenditure of $2,000,000. The original plans have been altered in that the power plant will be located about 4 miles further down the Yadkin river from the site first selected and its capacity will be increased from 60,000 to 100,000 horsepower.

The new plant, which is expected to be completed about the middle of 1914, will have an estimated capacity of 40,000,000 pounds of aluminum ingots and wire bars annually. An expenditure of about $15,000,000 is involved in the enterprise, the company controlling about 3,000 acres of land along the Yadkin river. Paul Bernet, vice president of the company, is in active charge of the construction work. The American Metal Co., 42 Broadway, New York, has been appointed exclusive selling agent for the output of the company.

New York Ore Production

Iron ore mined in New York state during the year 1912 reached 1,277,677 gross tons, according to the annual report of State Geologist John M. Clarke. The yield of furnace ore and concentrates was 1,057,702 gross tons, valued at $3,349,095. The Adirondack mines contributed the largest share to the total, followed by the mines in the Hudson Highlands, with the Clinton district in the third place. As has been the case in past years, iron ore is the first in importance among the metallic minerals produced in the state.

New Purchasing Agent.—Edward C. Geehr has been made acting purchasing agent of the Wm. Cramp & Sons Ship & Engine Co., Philadelphia, succeeding Geo. C. Cary, who has been promoted to the position of assistant treasurer and paymaster of the company.

Better Inquiry for Pig at Pittsburgh

With No Advance in Prices—Coke Firmly Held—Some Furnaces May Be Blown Out

BY C. F. WILLIAMS

Office of THE IRON TRADE REVIEW,
2148-49 Oliver Bldg.,
Pittsburgh, July 15.

The market continues quiet, but mills are being driven almost to the limit and if consumption continues at its present rate, considerable activity should be experienced a couple of months hence. The closing of the First-Second National Bank was closely followed by the appointment of receivers for a steel plant, a coke and several coal companies in this district, but the general trade has not been seriously affected.

Pig Iron.—Better inquiry with no improvement in prices features the pig iron market. Basic is being held at $14.50 and Bessemer at $16, valley, but both quotations are eyed with some suspicion. The Reliance Steel Foundry Co. has bought a small tonnage of Bessemer at less than $16 and the Pittsburgh Steel Co. continues to figure in the basic market, it being reported to have closed for 5,500 tons for July shipment. The Standard Sanitary Mfg. Co. is negotiating for 5,000 tons of foundry and gray forge for shops at Pittsburgh and New Brighton, Pa., and the National Radiator Co. wants 5,000 tons for its plant at Johnstown, Pa. Foundry is not above $14, but in good demand. The general inquiry of the Alton Steel Co. for 4,000 tons of basic and 1,500 tons of Bessemer has been received in this district. This is the initial inquiry from the Alton company, which is building a new plant at Alton, Ill.

Ferro-Alloys.—Dealers here reduced the price of ferro-manganese to conform with that in the east, and are now asking $58.50 as against $61, seaboard. The $61 quotation had prevailed since April 1, but was never well established. The market for other alloys is quiet.

Plates.—The 1.45c quotation is being well maintained, but practically no buying is being done. Shipments are improving steadily, but larger mills are well protected with orders.

Sheets.—Galvanized steel sheets have sold at 3.30c for No. 28 gage in Ohio within the last week or ten days. The American Sheet & Tin Plate Co. is asking $4 a ton above that figure, and is making no concessions. Black sheets are not quotable below 2.25c. There is no new business and very little tonnage is being sold at any figure.

Rails.—Inquiries are plentiful but involve rather small tonnages and the general market is not expected to display much activity this month. Spikes are quiet, but no weaker. Other track fastenings are firm.

Billets and Sheet Bars.—As high as $28, mill, has been quoted by billet makers, but no traces of sales can be found. An official of one of the leading steel companies says sheet bars have not been sold at less than $27.50, mill, despite contrary reports.

Hoops and Bands.—The market is dull. An inquiry for a round tonnage of steel hoops probably would bring out quotations $2 a ton less than the prevailing 1.60c price. Bands, however, reflect strength and are firm at 1.40c.

Iron and Steel Bars.—Consumers of steel bars are urging shipments just as actively as ever, but are enjoying much better deliveries. Some mills have enough orders on their books to keep plants busy through the remainder of the year and not many cancellations have been made. Iron bars are quiet but firm. Cold rolled shafting is quiet and the prevailing prices probably could be shaded by a cautious consumer asking for a heavy tonnage.

Muck Bars.—Consumers appear fairly well covered and no inconvenience has been experienced because some mills shut down July 1 on account of labor troubles. Muck bar is quoted at $31, Pittsburgh.

Bolts, Nuts and Rivets.—Pittsburgh manufacturers say the market here is being well maintained, but it is understood lower quotations on nuts and bolts continue to appear in other territories. Deliveries of rivets are a couple of months deferred.

Structural Shapes.—Fabricators are taking a large number of small orders, but no particularly large orders have been received. The prevailing 1.45c quotation is being held.

Iron and Steel Pipe.—Inactivity in the oil and gas fields continues to provide manufacturers with inquiries for oil country goods, and in the aggregate a heavy volume of orders has been placed the last fortnight.

Boiler Tubes.—Demand continues satisfactory and mills have not yet been able to catch up in deliveries. Prevailing discounts are being well maintained.

Tin Plate.—The market is quiet, but mills are well protected with orders and heavy specifications are expected to come out within two or three weeks. The Pope mill of the Phillips Sheet & Tin Plate Co. is operating in part, although trouble with the Amalgamated Association has not yet been settled.

Wire.—The American Steel & Wire Co. is holding wire products on the basis of 1.80c for nails, but a few independent companies continue to sell below that price. Some in the trade expected quotations would be reduced the first part of this month, but no official changes have been announced.

Wire Rods.—Small tonnages continue to be sold at a range from $29 to $30 and that spread represents the market.

Coke.—Prompt coke is scarce and since producers are regulating output, no surplus is expected to find its way to the market. Several coke companies were indirectly connected with the First-Second National Bank of Pittsburgh, and talk is heard that lower prices may prevail if certain interests get control of some ovens. Blast furnace fuel is not selling below $2.50 and as high as $2.75, ovens, has been obtained in isolated cases. The Connellsville *Courier* for the week ending July 5 says production was 333,358 tons. Production for the first half was 10,657,038 tons. If the present rate of production is continued through the year, all previous records will be broken.

Old Material.—Heavy melting steel has not fallen below $12.50 and low phosphorous scrap has reflected some strength the last few days, but other grades are quiet and weaker. The embargo against the Jones & Laughlin Steel Co. has been lifted, but the company has plenty of material on hand.

Puddlers' Wages Advanced

The bi-monthly wage settlement between the Amalgamated Association of Iron, Steel and Tin Workers and the Republic Iron & Steel Co. and the Western Bar Iron Association made at Youngstown, July 11, showed a rolling mill average of bar iron of 1.52c as against 1.54c for March and April. Under the new wage scale, puddlers will receive $7 a ton as against $6.75 provided by the old wage rate. The actual puddling mill average of bar iron the first six months this year was 1.51436c; in 1912, the average for the year was 1.2683c.

Better Pig Conditions at Chicago

With More Extensive Inquiry and Fair Buying—Leading Finished Materials Are Dull

BY H. COLE ESTEP

Office of THE IRON TRADE REVIEW,
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Chicago, July 15.

Pig iron is holding the center of the stage and sales last week were considerably larger than during any of the several weeks preceding. The finished steel market, however, appears to be drifting without making much progress in either direction. Specifications continue heavy, but are not equal to shipments, and new business is much less than the productive capacity. There has been a fair amount of business in sheets, wire and merchant pipe, while on the other hand, plates, structurals, rails and track fastenings are moving very sluggishly. The scrap market is inert.

Pig Iron.—The week just closed witnessed considerable buying, coupled with active inquiries and the tonnage now pending or under negotiation is larger than it has been for a considerable period. The improved conditions have naturally resulted in a stiffened price attitude on the part of the makers and $10.50, Birmingham, is the minimum for southern iron. It is still possible to obtain tonnages of northern foundry and malleable Bessemer at $14.75, Chicago furnace. The L. Wolff Mfg. Co., Chicago, has purchased 1,000 tons of southern iron for last half at $15.10, Chicago. The Sandwich Mfg. Co., Sandwich, Ill., is inquiring for 1,000 tons, the Red Jacket Co., Davenport, Ia., for 1,200 tons, and the Baker Mfg. Co., Evansville, Ind., for 400 tons of southern iron. Parlin & Orendorf, Canton, Ill., are negotiating for 2,000 tons of malleable and 1,500 tons of foundry iron. The Bradley Mfg. Co. is inquiring for 200 tons of malleable and the Emerson Brantingham Co., Rockford, has closed for a round lot of southern iron. The Alton Steel Co., which is building a new hoop mill at Alton, Ill., has sent out a general inquiry for 4,000 tons of basic and 1,500 tons of Bessemer for second half delivery.

Merchant Bars.—A majority of the implement makers have now closed for their annual steel bar requirements, but among the firms that are still holding off are several very prominent buyers controlling large tonnages. These, it is understood, include the International Harvester Co., the Emerson-Brantingham Co., Rockford, Ill, the Deere interests, of Moline, and the Avery Co. The government's suit against the Harvester company, coupled with some internal changes in organization now in progress, are said to be responsible for this corporation's failure to contract. The Harvester company is buying liberal tonnages for current requirements and may continue this policy for some time. The situation affecting iron bars is unchanged and there has not been sufficient business recently to test the current prices. The East Chicago and Moline mills of the Republic Iron & Steel Co. resumed operations on July 14 after a shutdown of two weeks. A considerable tonnage of specifications was accumulated during the idle period.

Plates and Structurals.—Railroads are specifying liberally on their existing contracts and in some few cases are asking the mills to anticipate shipments. The situation as regards delivery on mill specifications is improving and it is now possible to obtain shipments on current orders in 60 days or less. Jobbers are maintaining an optimistic attitude. Orders for plates and shapes out of stock are rather numerous, although the tonnages are somewhat disappointing.

Rails and Track Fastenings.—Local producers report an encouraging volume of scattering orders for standard rails and a fair amount of business in light rails. Improvement in the demand for lumber, which is expected in the fall, would stimulate rail orders from the numerous logging roads scattered throughout the west and south. There is very little activity in track fastenings and prices remain unchanged. On spikes, 1.75c Chicago, would still be quoted on attractive specifications.

Bolts, Nuts and Rivets.—There is some buying for current requirements, but beyond this there is little activity. Buyers feel that the present prices are uncertain and for this reason they are not inclined to enter the market freely for their future requirements. There are no reports of prices lower than 2.08c, Chicago, for structural rivets; this figure is 2 cents less per 100 pounds than the Pittsburgh quotation.

Sheets.—There seems to be a fair amount of buying out of stock and mill specifications are generally satisfactory. New business is light. Galvanized sheets are being sold from mills reaching Chicago territory on the basis of 3.35c, Pittsburgh, although the local makers are holding for 3.58c, Chicago, on No. 28 gage. Cooler weather has improved the production.

Wire Products.—Fairly liberal rains throughout the corn belt have resulted in improved sentiment in the agricultural wire trade. There is still some irregularity on nail business and it is understood that difficulty is being experienced in maintaining the price of 1.80c, Pittsburgh. Jobbers are not carrying heavy stocks of wire at present and an improved demand from consumers would be almost immediately reflected in the orders going to the makers.

Cast Iron Pipe.—The American Cast Iron Pipe Co., of Birmingham, has taken 300 tons at Monroe City, Mo. Bids for 300 tons of water pipe were opened July 16 at Fergus Falls, Minn. The United States Cast Iron Pipe & Foundry Co. has been formally awarded 2,000 tons at Cincinnati. The prices made in some of the recent municipal lettings indicate that some of the smaller makers are hungry for business. This is the dull season for gas pipe. The leading interest, however, has taken a small tonnage at Aberdeen, S. D.

Merchant Pipe and Tubes.—A virtual settlement of the building trades strike has improved sentiment in the pipe market and deliveries out of stock are on a more extensive scale. Specifying on boiler tube contracts continues satisfactory. Prices are fairly stable.

Old Material.—The movement of scrap from producers to consumers is not sufficiently heavy to have any effect on the market and prices are almost stationary. A dealer recently offered $13.50, Chicago, for a tonnage of old iron rails, but the seller did not care to move them at that price. Iron angle bars are weaker. The Chicago, St. Paul, Minneapolis & Omaha railway, a part of the Northwestern system, offered 450 tons of various grades of scrap, on which bids closed July 17. The B. & O. received bids July 14 on 12,000 tons, including 1,500 tons of steel rails.

The American Railway Tool Foremen's Association will hold its fourth annual convention, July 22, 23 and 24 at Hotel Sherman, Chicago. Foremen in charge of tool departments of steel and electric railway shops form the membership of the organization. Exhibits of tools and machinery will be displayed in rooms adjoining the convention hall.

Clevelanders Figure on New Ore Rate

Which Would Mean Loss of About $300,000 to Railroads—Making Steel at New Furnace

BY GEORGE SMART

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Penton Bldg.,
Cleveland, July 15.

Iron Ore.—Rains and thick weather interfered with the movement of ore last week, as some of the open pit mines were unable to operate and fogs detained the vessels en route. But this week there is a decided improvement, and ore is moving satisfactorily. It is now believed that, with anything like favorable weather conditions, 8,000,000 tons can easily be moved this month, making another new record.

Cleveland ore men are only indirectly interested in the proposal of the railroads to make an 88-cent rate on direct ore from lower lake ports to Pittsburgh and Wheeling, but they have been doing a little figuring and find that at a reduction of 8 cents on an estimated movement of 15,000,000 tons to the Pittsburgh district, the loss to the railroads would be $1,200,000, while an advance of 28 cents per ton on 3,200,000 tons shipped to the Wheeling district would amount to $896,000, so that the net loss to the railroads would be $304,000. It is not believed that the proposed rate would be satisfactory to either the Pittsburgh or the Wheeling district.

Pig Iron.—Buying continues in a very limited way, at low prices. A Michigan foundry is inquiring for 1,200 tons of 2.50 per cent silicon iron. A Northern Ohio foundry is in the market for 500 tons. The Cleveland Furnace Co. is well sold up on its two stacks for a considerable time and will keep its full capacity in operation throughout the remainder of the year. Some agencies having furnaces in other districts are not so well situated and are already seriously considering the blowing out of a number of stacks, as they are unable to make any profit at the present prices and are not compelled to continue in operation at a loss, as some weak companies are, in order to make payments on ore.

Coke.—Coke producers stand solidly for the $2.50 price and some furnaces are having difficulty in buying even at that figure. Large tonnages have been bought through Cleveland agencies during the past few days at $2.50. Many ovens have been put out of commission, but other ovens not controlled by the present combine will be in operation Aug. 1. At the present time, however, the producers hold the key to the situation.

Finished Material.—The demand for specialties handled by leading steel companies is active at the present time, but in ordinary products there is little new business. Demand for deliveries continues unabated, however, and the general situation is sound. Efforts to shade prices on shapes, plates and bars below those long asked by the Steel Corporation have been unavailable. Continued reports of low prices on wire and wire nails are heard. There is also shading on shafting, on which 62 off has been done. There is a fair demand for rivets, with prices pretty well maintained. Specifications have been received on a car dumper to be built at Conneaut for the Pittsburgh & Conneaut Dock Co., which will require from 300 to 400 tons of steel. A railroad order for 375 tons of shapes, plates and bars, on which the contract had been delayed, has now been entered.

Wire jobbers report that business keeps up in a satisfactory manner and state that except for the extremely heavy business of the past year, present business would be considered most excellent.

The Upson Nut Co. has resumed operations at its steel plant and has started making steel at the new open-hearth furnace. The iron mills, which have been idle two weeks, will resume next week or the week following.

Old Materials.—The scrap market continued very stagnant during the past week. There has been little buying of late for future delivery. Most mills using busheling are said to be well stocked into September. No. 1 machine cast scrap has been in some demand and is now quoted $11.50 to $12 per net ton. Heavy steel continues about $11 to $11.25.

Corry & Co., Oliver building, Pittsburgh, have recently placed on the market a submerged coal washing jig, which is understood to be giving excellent satisfaction wherever used.

FAIR TONNAGE

Placed in Southern Territory—Large Stocks on Furnace Yards.

BY W. B. NEAL

Office of THE IRON TRADE REVIEW,
Birmingham, Ala., July 15.

Pig Iron.—The evident determination of the Tennessee company to adhere strictly to an $11 per ton, Birmingham basis, for any delivery in the remainder of the year has increased sales to an appreciable extent. This is true particularly in southern territory, and where the requirements of the smaller consumers have been under consideration for some weeks. An aggregate of some 15,000 tons is reported placed with the several producers during the past week, which is a substantial improvement over the trading in any of the three to four weeks just preceding. The bulk of this tonnage was no doubt entered at a basis of $11 per ton at Birmingham for No. 2 foundry; however, a basis of $10.75 per ton was the consideration in several transactions, and a certain brand was not quoted at higher figures than $10.50 per ton for No. 2 foundry in any case. This last price is understood as still applicable to more or less tonnage, but is quoted subject to change with changes in local conditions at the furnace plants. The sales reported consist of a single lot of 3,000 tons of No. 2 foundry for delivery through the last half; 2,500 tons of analysis iron for shipment through the third quarter; 1,000 tons of No. 2 soft for third quarter delivery; 750 tons of No. 2 foundry and 500 tons of No. 3 foundry for delivery over the remainder of the year, together with some 5,000 to 7,500 tons in smaller quantities for delivery covering the next 60 to 90 days. Stock returns as of July 1 do not show the increase in the aggregate accumulation that had been expected, but with more than 200,000 tons on furnace yards, order book requirements do not compare favorably with even the present rate of production.

Cast Iron Pipe.—Local producers are operating practically to capacity, but at the majority of plants the bulk of the output is being stocked. The large contracts that have been under consideration for some months are still being held in abeyance.

F. B. Gaylord, formerly of the Gaylord Iron Co., Detroit, and the Deseronto Iron Co., Deseronto, Ont., but who has been retired for some time, has taken an interest in the Flexible Steel Belting Co., Bridgeport, Conn.

Southern Price Recession is Checked

At Cincinnati and Minimum Quotation is Expected to Disappear at Early Date—Coke is Strong

BY S. G. BACKMAN

Office of THE IRON TRADE REVIEW,
503 Mercantile Library Bldg.,
Cincinnati, July 15.

Pig Iron.—Feeling here is that furnaces have taken about all the contracts they desire at $10.50, Birmingham, and dealers are naming that figure now for the most part subject to confirmation. As a matter of fact, it appears that more pig iron is selling at $10.75 to $11 than at lower figures. No shading of $10.50 is being done, as far as can be discovered. A number of furnaces refuse to sell under $11, and some have set even higher prices and say the output will be piled or they will cease operations if their price is not met. Entire disappearance of the $10.50, Birmingham, quotation is expected within the next week or ten days.

Unless still greater strength is apparent in southern pig iron shortly, it is believed all but one or two Tennessee furnaces will blow out. Once out, it will take more than 50 cents' advance to bring them into the market again, and the curtailment of output will have a strengthening effect.

Business for the most part is on small sales, and while a considerable inquiry is before the trade, none is notable. Melters are taking notice of advancing prices, and those who have not contracted their requirements are beginning to get under cover.

Southern Ohio pig iron is firm at $14.50, Ironton, though it does not show the strength of southern iron. Shading of this quotation is not seen, but nothing higher appears to be done.

Coke.—Strength of the coke market is the feature of the trade here, no downward deviation from $2.50, ovens, for furnace coke being met. Indeed, one furnaceman was forced within the past week to pay $2.55 on an attractive tonnage. There appears to be no surplus and deliveries are slow, production apparently having fallen below demand a trifle. Effect of the holidays is felt and producers have not yet secured normal operation of their ovens. Quotations remain unaltered from last week on all grades.

Finished Material.—Summer quiet marks the finished material market here, and comparatively little business is being done. Dealers profess to note some quickening of inquiry and some contracting is being done, though specifications against old contracts are not brisk. Some bettering is seen in wire and nails, in some quarters. Store prices remain unchanged, with light business. Building material is inactive with lessening of demand.

Sheet prices remain stationary at 2.35c for No. 28 gage black and 3.40c for the same gage galvanized, Pittsburgh basis, with indications good for better demand in the fourth quarter.

Old Material.—Nominal prices continue to rule in the scrap market here, practically no business being done, as far as this market is concerned, but some shipments to other points are noted. Heavy melting steel and bundled sheet scrap appear to be weaker and are marked down a trifle. With practically all foundries here idle on account of the strike of molders and other labor troubles impending, business is slowing up remarkably. Users and dealers are overstocked with scrap and with consumption lessened the market is weakening steadily. Resumption of operations by the Newport Rolling Mills, the largest user of scrap locally, has not steadied the market, as had been hoped by some dealers.

Buying for Early Needs in Philadelphia

Users of Finished Material Not Taking on Large Tonnages—Considerable Buying of Pig Iron at Low Prices

BY C. J. STARK

Office of THE IRON TRADE REVIEW,
611 Bulletin Bldg.,
Philadelphia, July 15.

No break is perceptible in the quietness of forward buying in the eastern iron and steel market. Consumers confine their purchases usually to requirements actually in hand and do little anticipating. Mill orders as a result are largely of a miscellaneous character. Considerable pig iron is being bought, but prices continue to yield. Scrap is quiet.

Pig Iron.—A fair buying movement in pig iron is being maintained, but prices are not responding. As the settling market brings prices nearer the cost line, producers offer more resistance to meeting concessions. The decline has not been arrested, however. Northern No. 2X at Philadelphia and vicinity is now available at $15.50, delivered, or 25 cents lower. The Baldwin Locomotive Works divided 4,000 tons of 2.50 to 3.45 per cent silicon iron for third quarter equally between northern and southern makers. The southern iron went at $10.50 to $10.75, Birmingham, or $14.70 to $14.95, delivered, and the northern metal at approximately $15.50, delivered. The Standard Cast Iron Pipe & Foundry Co. has closed against its inquiry for 5,000 tons of No. 3 and forge for July-August, largely with southern makers, at $10.50 and $10, Birmingham, or $14.70 and $14.20, respectively. One maker received 2,000 tons at this basis. Another pipe maker took 3,000 tons of early forge. A Williamsport radiator company bought 1,000 tons of No. 2X from nearby furnaces. A Virginia pipe maker who has been in the market has closed. In Baltimore a soil pipe maker and a stove maker are inquiring for 1,000 tons of foundry each. Stove makers in this district also still figure. Virginia iron remains at $13.50, furnace, for No. 2X. Two eastern Pennsylvania rolling mills ask 1,000 tons of forge. Standard forge is quotable at $14.75 to $15, delivered. In recently reported sales of basic for delivery in this district, $15.50 was shaded. A round lot would probably bring out $15.25, delivered. A central Pennsylvania buyer still inquires for its third quarter needs. Several small sales of standard low phosphorus brought $23.50, Philadelphia basis. A Lebanon district maker recently took about 1,500 tons from the General Electric Co.

Iron and Steel Bars.—Implement makers in this district who have been closing for their last half steel bar requirements have placed 3,000 to 4,000 tons at 1.40c, Pittsburgh, and are still out for 6,000 to 8,000 tons. This does not include one lot of 15,000 tons of axle bars which is unclosed. The

C. & O. railroad has not acted upon 3,000 tons, and the B. & O. railroad asks a small lot of prompt bars. Specifications against contracts are rather slow. Deliveries gradually improve. Bar iron has further weakened sharply and sales of common bars have been made as low as 1.25c, eastern mill. Some of the larger makers will not meet this price and hold to 1.40c, mill. A number of the mills are resuming after their summer shutdown. Shafting prices on large orders are being shaded, up to 62 off.

Plates.—Orders, usually small, from many miscellaneous sources, constitute the principal new business of eastern plate mills. The aggregate is fair. Forward buying is slight. Ship and bridge builders report considerable figuring but few awards. Prices for eastern delivery continue at 1.50c, Pittsburgh, or 1.65c, Philadelphia, for tank steel. Western plates forward delivery are at 1.60c, Philadelphia.

Shapes.—Buyers of shapes with round lots to offer are canvassing the market in an effort to shade 1.45c, Pittsburgh, generally quoted by eastern mills. So far they have been unsuccessful. One lot of 5,000 tons of plain material is offered. Fully 10,000 tons of fabricated material upon which awards are awaited, is pending in this district. New mill business is very moderate, especially larger sizes. Small shape capacity remains well filled.

Sheets.—Orders for sheets with eastern mills are very numerous and well balance shipments. These usually call for quick delivery. There is little forward buying. Though reports of concessions by western mills are occasionally heard, eastern makers are not obliged to shade 1.75c, Pittsburgh, for No. 10 gage blue annealed.

Semi-Finished Steel.—Consumers of billets in the east are now doing little buying, especially for future delivery. Eastern makers, however, are well filled. A Cleveland buyer asks 2,000 tons of forging billets. Prices remain $27 to $28, mill, for rerolling and $32 to $34, mill, for forging billets.

Old Material.—The scrap market continues heavy and sales are not freely made. The situation lacks healthy buying demand. Railroad lists just placed brought $11.75 to $12, delivered, for heavy steel, and around $14.50, delivered, for No. 1 wrought. In the open market, small sales under pressure are going at $11.25, delivered, for steel and at $14, delivered, for wrought. Moderate lots of steel bring $11.50, delivered. Car wheels, forge and low phosphorus scrap are lower.

Pig Iron is Very Dull in New York

With Inquiry and Rates Extremely Limited—Sharp Competition for Common Iron Bars—Scrap Apparently at Bottom Prices

BY C. J. STARK

Office of THE IRON TRADE REVIEW,
1115 West Street Bldg.,
New York, July 15.

Iron Ore.—A very quiet condition exists in the eastern ore market. Buyers are little interested in new purchases. Shipments are keeping up well.

Pig Iron.—Activity in the pig iron market in this territory has lapsed to very meager proportions. Practically no formal inquiry of any consequential size is now in circulation, though occasionally some tonnage lots are the subject of quiet offers between buyers and sellers. Prices remain irregular and are not strengthening. Buyers at tidewater points find little trouble to obtain northern metal at $15.50 to $15.75, delivered, for No. 2X. Buffalo makers are selling on this basis, or $13.75 to $14.00, furnace. It is reported one eastern Pennsylvania maker has accepted some business below $15.50, delivered. The New Jersey Zinc Co. bought 875 tons of foundry grades from Eastern Pennsylvania makers and a Jersey furnace company took 1,000 tons of No. 2X additional, which it is reported will come from Buffalo. A New Hampshire buyer distributed about 1,200 tons of No. 2X around $16.50, delivered. An equipment maker bought 5,000 tons of foundry iron for outside delivery, which is in addition to other reported purchases. A New England buyer has been making offers on 5,000 tons of southern. The inquiry for 5,000 tons of basic for a Phillipsdale, R. I., wire maker, is still open. A Brooklyn consumer wants 600 tons of foundry. It is understood the Malleable Syndicate has been seeking to buy malleable at $13.00, Buffalo basis, or $15.45, New England, which is about $1 under the present market.

Ferro-Alloys.—Some sales of ferro-manganese have been made at the recently reduced level of $58.50, seaboard. One Ohio consumer took less than 500 tons for third quarter and some earlier material went at the same price. Resale material has been done at concessions from the new price, about 300 tons selling for $57.00, seaboard. A buyer in the Pittsburgh district, inquiring for 300 tons, has withdrawn. An inquiry for 100 tons of 50 per cent ferro-silicon for eastern delivery, is current.

Plates.—The volume of new business is not increasing and the current market is made up largely of miscellaneous orders for early shipment. Contracting for forward delivery is light at this time. Specifications, however, are very active and the larger mills are filled months ahead. Eastern Pennsylvania makers continue to offer plates from two to four weeks or for the last half at 1.50c, Pittsburgh, or 1.66c, New York. There is no life in the car market.

Structural Material.—A better tone has appeared to the metropolitan structural situation, owing to the more liberal lettings the past week, which have been the best in some time. Forward building prospects are improving. Much activity in apartment work is promised and leading fabricating interests are looking forward to a favorable activity in the fall. There is no evidence of the shading of the 1.45c, Pittsburgh, or 1.61c, New York, price by eastern mills, though some such reports occasionally appear. With some more attractive tonnages now to offer, buyers will be able to try out the price situation more thoroughly. Fabricated competition remains keen.

Iron and Steel Bars.—Sharp competition for common iron bars continues to be waged among the mills located nearby New York City and prices have weakened to as low as 1.25c, mill, or 1.31c to 1.33c, New York. Eastern Pennsylvania makers in some cases have also made 1.25c, mill, but on the higher grade bars, 1.40c, mill, is usually asked. New business is only moderate. The steel bar market is quiet. Buying is confined to odd lots and few contracts are being made. Specifications are less active. Milliken Bros., Inc., are inquiring for several hundred tons of angles.

Cast Iron Pipe.—There is a report that English and Scotch makers will furnish the 100,000 tons of large pipe for the sewer line at Buenos Aires, Argentine, although positive confirmation of it has not been received by those American makers who have thought of entering bids. Schenectady is taking bids this week on 1,000 tons of 24-inch. The 10,000 tons for the extension of the New York high pressure line has not yet been placed by the contractor. The market is not very active, though eastern foundries are moderately filled with business. Prices show considerable variance, 6-inch pipe having recently sold as low as $21.00 and as high as $23.00, at eastern Pennsylvania foundries.

Old Material. — Dealers continue reluctant to commit themselves on large sales because of difficulty to cover at prevailing prices. The market is very

narrow, both buyers and sellers keeping to small lots. There are some indications that prices are about at bottom. Heavy steel in moderate tonnages rules at $11.50 to $11.75, delivered, and railroad wrought at $14.00 to $14.25, delivered eastern Pennsylvania. A sale of stove plate at $10.00, delivered, is noted.

More Pig Iron Bought at Buffalo

And Inquiries Show Improvement—One Furnace Blows Out and Others May Do So

BY FRANK R. DOLBEE

Office of THE IRON TRADE REVIEW,
Buffalo, July 15.

Pig Iron.—The general price situation is the same as reported a week ago, but an improvement in the amount of inquiry and placement is noted. The sales for the week totaled about 15,000 tons. The character of the inquiry indicates that many of the buyers are reaching the point where they feel that prices are at a level where it is to their advantage to endeavor to cover for their requirements. On the other hand, most of the furnace interests are not disposed readily to accept the low price views of the consumers, and are curtailing production, because, as pointed out last week, the furnacemen claim that the prevailing schedules represent figures that are considerably below cost. The placements made were for a variety of orders throughout the district and New England points.

One of the Niagara furnaces of the Tonawanda Iron & Steel Co. was blown out on Friday. Its relighting will depend upon a turn for the better in the market conditions. The same situation is true of the other stacks that are out of commission.

Finished Material.—Some of the mills and agencies report that the volume of specifying, inquiry and new business is in keeping with the trading which usually reaches a lull period at this season of the year. Other interests report that consumers are pressing them hard for deliveries on material under contract. All agree than despite the loaded-up conditions of the mill books, the absence of a buying movement and the talk of general unsettled conditions in the trade, none of these influences has brought about the cancellation of any orders, irrespective of how many months ago they were placed. It is reported on all hands that the material going forward is going direct into consumption, that the shops of the district are all busy and the talked-of trade depression is a mental one on the part of the buyers, and not a physical one between their plants and the ultimate consumer.

Unless there is a stoppage of consumption, the dwindling of the consumers' stocks, as well as those of the warehouses, are sure to bring about the revival of another buying movement, which is expected to develop early in the fall. Some sales have been made in cold rolled, as buyers are inclined to the belief that the market in this commodity is as low as it will go with bars where they are. In black and galvanized sheets, the market is quiet with prices firm. In wire nails 1.80 is being quoted, but 1.70 is said to be obtainable. Jobbers' stocks are being drawn against and are getting low. An increase in demand upon the mills is looked forward to at an early date, because of the reported rate of consumption.

Old Material.—A limited amount of business is being done by the dealers of the district. The prices quoted a week ago still prevail. The yards all report that this is usually a dull period and that no exceptions to the rule have manifested themselves so far. There is no effort being made to place large tonnages in heavy melting or other lines, as an improvement in the price situation is looked forward to by all the dealers. At the same time, buyers show little or no sign of figuring that the market presents to them an advantageous time to buy for their requirements.

Will Make Engines.—The Providence Engineering Works, Providence, R. I., which was bought out recently by Norman Leeds, James Coulter and others interested in the Automatic Machine Co., Bridgeport, Conn., will continue to make engines as in the past. Other plans, however, are indefinite. R. A. Robertson continues as president of the Providence Engineering Works and F. L. Vaughn as secretary. New officers are James Coulter, vice president, and Norman Leeds, treasurer and general manager.

NUMEROUS SALES

Of Small Lots of Pig Iron in the St. Louis District—Prices Firmer.

BY E. C. ERWIN

Office of THE IRON TRADE REVIEW,
St. Louis, July 15.

Pig Iron.—Business has picked up considerably since the middle of last week and one sales agent reports 16 sales with a total of 4,475 tons of pig iron. All of this was southern iron and probably went at less than $11. Inquiries are out for 1,000 tons of southern No. 2, 500 tons of car wheel, 450 tons of southern for Dubuque, Ia., 150 tons of northern iron, also for Dubuque, 2,500 tons of Bessemer, 3,000 tons of basic and from 1,500 to 1,800 tons of various grades. Most agents are holding out for $11 to $11.50, f. o. b. Birmingham, for southern No. 2. A number of agents assert that they have declined orders at a lower figure.

Coke.—Coke is in fair demand, ruling at about $3, ovens, for Collinsville and foundry grades. One sale was reported today of 3,000 tons, also a contract for 500 to 600 tons.

Old Material.—There is very little being done in scrap iron and prices have undergone no change. There are no lists out.

Building a Great Bridge

Work is proceeding expeditiously on the construction of the huge Quebec bridge across the St. Lawrence river at Cap Rouge. During the year the new plant which was established at Rockfield, Que., by the contractors has turned out a large quantity of material; 1,500 tons of the members of the bridge having been fabricated. Steel for the false work, crane, etc., is being shipped to the site. Ten thousand tons of steel have been ordered from the mills at Pittsburgh and of this 6,200 tons have been delivered at the shops at Rockfield and 2,000 additional tons have been manufactured.

Appointed Selling Agents.—The Alabama Co., Birmingham, Ala., has appointed Hickman-Williams & Co. exclusive selling agents for Clifton iron in the Chicago office territory. The Clifton furnaces are at Ironaton, Ala. There are two stacks, one 70 x 17 feet and the other 75 x 16 feet. The former was built originally in 1884 and the latter in 1890. Both furnaces have since been rebuilt. Their annual capacity is 100,000 tons. The arrangement with Hickman-Williams & Co. was made effective July 15.

Important Structural Work Placed

Indianapolis Company Gives Up May Building—Eastern Business Awarded Amounts to 20,000 Tons—Equal Tonnage Pending

New York, July 16. (By wire.)—Some large awards of structural material continue to be made. The American Bridge Co. has 6,000 tons for the Altman store addition, New York, and 4,000 for viaduct work on Pennsylvania Lines West in Chicago.

Some of the larger work which has been hanging fire in the New York structural market for some time was finally acted upon the past week and these awards, with some other sizeable contracts, have made the total tonnage the heaviest of any similar period in some weeks. Fully 20,000 tons were placed in eastern territory in the week, including some export works. The largest awards were 9,400 tons to the Hay Foundry & Iron Works, for the Hill and Hollenbeck printing houses, New York City, and 5,000 tons to the Belmont Iron Works, for the new plant of the Southern Aluminum Co., at Whitney, N. C. Pending tonnage in the east, including railroad work, upon which bids are out, reaches 20,000 to 25,000 tons. This includes about 10,000 tons in Philadelphia and eastern Pennsylvania, where 5,000 to 6,000 tons for two steel plants at South Bethlehem and Lebanon, Pa., are still open. The forward structural outlook in the metropolitan district is improved.

Better inquiry for structural material has come out in the Pittsburgh district. Although fabricators have not taken any large contracts this week, they say demand is heavier than it was, and that a large volume of small tonnages is involved in pending transactions.

Aside from an office building contract for 4,000 tons let in Chicago, the fabricating situation in the west is very quiet and the tonnage involved insignificant.

The bankruptcy of the Noelke-Richards Iron Works, Indianapolis, will prevent this concern from executing its contract for the May building at Cleveland, and arrangements have been made for the fabrication of the columns and girders of the first section by the American Bridge Co., about 1,500 tons, and that the material for the beams, about 2,000 tons, will be furnished by the Cambria Steel Co. The entire structure will call for about 9,000 tons.

The Pittsburgh Bureau of Building Inspection has approved plans and has issued a permit for a 20-story office building designed by Architect F. J. Osterling, to be erected on the D. H. Hostetter site, Fourth avenue and Grant street. A heavy tonnage of steel will be involved.

The Riter-Conley Mfg. Co., of Pittsburgh, has taken a contract from the Pennsylvania Lines West for a trough floor bridge at Fifty-ninth street, Chicago, 600 feet long and 36 feet wide, involving 2,150 tons of steel, and has been awarded a contract for a mixer building for the Maryland Steel Co., at Sparrows Point, Md., involving 250 tons.

STRUCTURAL AWARDS.

A trough floor bridge, Chicago, for the Pennsylvania Lines West, 2,150 tons, the Riter-Conley Mfg. Co.

Furnace bindings, stacks, etc., for the Kokomo Steel & Wire Co., Kokomo, Ind., 600 tons; Alex Laughlin & Co., Pittsburgh, engineers in charge, placed steel contract with Jones & Laughlin Steel Co.

Addition to the University of California, Berkeley, Cal., 500 tons, the McClintic-Marshall Construction Co.

Printing house for Hill Publishing Co., Tenth avenue and Thirty-sixth street, New York City, 3,700 tons, awarded Hay Foundry & Iron Works.

Printing house for Wynkoop, Hollenbeck & Crawford Co., Lafayette and Franklin streets, New York City, 5,700 tons, awarded to Hay Foundry & Iron Works.

Refrigerating plant, Rio Janeiro, Brazil, 2,000 tons, awarded United States Steel Products Co.

Levy apartment, Seventy-second street, New York City, 1,000 tons, to Passaic Structural Steel Co.

New plant for the reduction of aluminum and the manufacture of aluminum articles, of the Southern Aluminum Co. at Whitney, N. C., 5,000 tons, awarded to the Belmont Iron Works.

Buildings, ore bins and other construction work for the copper mines of the Chili Exploration Co. in Chili, 1,500 tons, awarded to McClintic-Marshall Construction Co. About 2,000 tons of similar work for same interests now pending.

Fallsway viaduct, Baltimore, 700 tons of concrete bars, awarded Dietrich Bros. The Corrugated Bar Co. will supply the bars.

Filtration plant, Baltimore, 900 tons of concrete bars, awarded the Philadelphia Steel & Wire Co.

Michigan Boulevard building, Chicago, 4,000 tons, George A. Fuller, general contractor, to the Chicago Steel Products Co.

First Congregational Church, San Francisco, 400 tons, to the Ralston Iron Works.

PENDING CONTRACTS.

Seven-story hotel, Johnstown, Pa.

St. Ignatius, Layola high school, Madison avenue, New York City, 1,400 tons. Bids being taken.

Apartment for Woolsey Realty Co., Eighty-fifth street, New York City, 500 tons. Bids being taken.

Bottle factory, Havana, Cuba, 1,300 tons. Bids being taken.

Highway bascule bridge, Wilmington, Del., 700 tons. Again up for bids.

MINING CONGRESS

Exposition in Connection With Convention in Philadelphia.

Manufacturers of mining machinery, rescue and first aid apparatus and safety appliances are to be given an opportunity to display their wares before the mining men of the country at an industrial exposition to be held under the auspices of the American Mining Congress, in Philadelphia, the week of Oct. 20.

This exposition, the first of its kind in this country, will be held in conjunction with the annual convention of the Mining Congress. It will be national in scope, as the metal mining interests of the west are expected to be as fully represented as the coal mining of the east. There is a tentative plan to have a gold mining camp in full operation with a mill crushing ore. Horticultural Hall has been engaged for the occasion.

The convention will be the first get-together affair of all the mining interests of the country, and an attempt is to be made to show the need of a stronger national organization. Among the topics to be discussed are the new system of mine taxation recently put in operation in some states, governmental policy toward the development of the natural resources of Alaska, the smelter fume problem, the disposal of debris from placer mining, the proposed system of leasing mineral lands and the "Safety First" movement.

Preparing for Foundry Convention

Chicago, July 15.—The first meeting of the general committee which has charge of the arrangements for the foundry conventions to be held in Chicago during October, took place at the La Salle hotel, July 15. Preliminary arrangements were made for carrying out the convention work, and an invitation was extended to the officers of the American Foundrymen's Association, the American Institute of Metals and the Associated Foundry Foremen to visit Chicago at an early date and consult with the local committee regarding convention affairs. It is expected that these gentlemen will be in the city some time next week.

The Emerson-Brantingham Co., Rockford, Ill., has declared the regular quarterly dividend of 1¾ per cent.

BRITISH IRON TRADE

Office of THE IRON TRADE REVIEW,
Prince's Chambers, Corporation St.,
Birmingham, Eng., July 5.

Somewhat better prices received in the northern pig iron market have reflected some slight improvement, yesterday's quotation being 55s 11d ($13.68) for warrants, with three months' price 2d better. The market is steadying somewhat and hopes are entertained that business will be on a sounder basis. July figures, it is expected, will show decided decrease in the stocks of Cleveland iron. The pig iron market is being seriously considered and talk is heard of furnaces being blown out as an alternative to further price reduction. Strong complaint is made that present selling prices are unremunerative, and Cleveland iron is still selling below all other British makes. In the Midland district the market is still completely disorganized by the strike and many furnace owners decline to quote upon business offered because of uncertainty of the future. Steel-making irons, on the other hand, continue to offer resistance to depressing influences.

In the finished iron and steel markets, it is noted that the prevalence of labor troubles has concentrated its worst effects on the Midland iron trades. The effect on prices has been depressing and the trade is subject to keen competition from abroad. Seemingly, things are going from bad to worse on the continent and this depression has diverted larger quantities of material into this district. For instance, Belgian bar iron is being sold to Staffordshire nut and bolt makers at £15 18s, delivered in the district, compared with £17 10s asked for Staffordshire common bars. Semi-finished steel is declining in value owing to stoppage of orders and Belgian steel is increasingly more actively competitive. Galvanized sheets continue to decline in price, one fairly good order of 1,000 tons this week going at £10 15s f. o. b. Liverpool. The wire and tin plate trades are also badly in need of orders, there being 110 tin mills still idle for lack of business. The ship building trade keeps up in a marvelous manner.

METAL MARKETS

New York

July 15.

Copper.—Unable to induce buying of copper by consumers on the strength of the favorable statistics, leading producers have lowered their asking prices ¾c to 14.25c for electrolytic, hoping to break the long deadlock between buyers and sellers. Reports up to date are lacking in evidence that their efforts to promote business are meeting with success. However, copper at around 14c is undeniably cheap and according to some of the best sources of information, sooner or later its merit will be recognized and orders must follow. That manufacturers can go very much further on stocks purchased weeks ago, is improbable, and there is a strong feeling that a buying movement will start soon. Lake and electrolytic copper are quoted at 14c to 14.25c, and casting at 14c, usual terms.

Exports since July 1, amount to 10,000 tons.

Tin.—The London tin market advanced to £188 for spot on July 14, but later in the day the price again declined violently, and continuing weak at the opening today touched £178 5s. Support was given around that figure, and spot closed at £182 and three months at £182 15s.

In the local market dealings between speculation in the metal have been active but consumers took very little interest in the market. Spot tin ranged between 39c and 40.62½c. At the close of business today, spot was offered at 39.87½c and all other positions up to Oct. 31 at 40c. Awards of tin since July 1, aggregate 2,420 tons and there are 1,627 tons afloat.

Lead.—The demand for lead shows some improvement over last week. Shipments are offered at 4.35c in New York, nd 4.30c is bid.

Spelter.—A fair amount of business has been placed at between 5.25c and 5.35c in New York. Recent sales have lightened producers stocks to a point where they feel less necessity for forcing businss, and the market has a steady tone.

Antimony.—Stagnation continues to characterize the antimony market. Cookson's is offered at 8.75c; Hallett's at 8.25c and other brands at from 7 50c to 7.75c.

Chicago

July 15.

New Metals.—In spite of favorable statistics reported by the Producers' Association, the copper market is weak and lower prices are noted. Spelter has rebounded to some extent on account of a slightly improved demand.

We quote dealers' selling prices f. o. b. Chicago, as follows:

Lake copper, carload lots, 14⅜c; casting, 14¼c; smaller lots, ¼c to ¾c higher. Spelter, car lots, 5.30c; lead, desilverized, 4.30c, sheet zinc, $7, f. o. b. La Salle, in carlots of 600 pound casks; pig tin, 41½c; Cookson's antimony, 8¾c, other grades, 7¾c.

Old Metals.—The market is somewhat unsteady on account of the decline in copper. The demand for lead and zinc is fair. On the whole, the market is quiet.

We quote dealers' selling prices f. o. b. Chicago as follows:

Copper wire, crucible shapes, 14c; copper bottoms, 12½c; heavy red brass, 12½c; heavy yellow brass, 11¾c; No. 1 red brass borings, 11c; No. 1 yellow brass borings, 8c; brass clippings, 10c; lead pipe, 3 9-10c; zinc scrap, 4¼c; tea lead, 3½c; No. 1 aluminum, 19c; No. 1 pewter, 34c; block tin pipe, 41c; tin foil, 36c; linotype dross, 3¼c; electrotype dross, 3¼c; stereotype plates, 4½c; stereotype dross, 4¼c.

The addition of 60 Koppers by-product coke ovens to the battery of the Woodward Iron Co. at Woodward, Ala., has been completed, and is being dried out preparatory to lighting.

RAILROAD BUYING

Is Extremely Light—Futile Attempt to Get Prompt Rails.

Railroad buying is not expanding in any marked degree. Some supplemental locomotive orders are being closed, but car buying is exceedingly light. Bridge orders are relatively few. Probably 8,000 to 10,000 tons is pending, the largest of which is 3,000 the Baltimore & Ohio. Rails are quiet. Makers still have so the B. & O. Makers still have so much business booked that they are usually running behind on their deliveries. One large eastern road has recently been trying to obtain with little success a lot of 10,000 tons of prompt Bessemer rails. The several rail inquiries for next year's delivery, which have been out for some weeks, have not been acted upon.

The western car market is practically bare of orders and it is not expected that there will be much activity until the fall. Operations at the plant of the Haskell & Barker Car Co. will be delayed on account of a serious fire, which destroyed practically all the lumber in the sill yards on July 13. It will require some time to acquire a new stock.

CAR AND LOCOMOTIVE ORDERS.

Southern railway, 28 locomotives, placed with the Baldwin Locomotive Works, of which 15 are of the Mikado and 137 of the Pacific type.

Virginian and Southwestern railroad, 3 locomotives of the Mikado type placed with Baldwin Locomotive Works.

Chicago Junction Railway, five six-wheel superheater switching locomotives with the American Locomotive Co.

El Paso & Southwestern Railway, five superheater Mikado type freight locomotives with the American Locomotive Co.

RAIL ORDERS AND INQUIRIES.

Lake Shore & Michigan Southern railroad, 1,000 tons of Mayari Bessemer rails, placed with Pennsylvania Steel Co.

Plantation work in Cuba, 1,000 tons of rails required. Inquiry issued.

BRIDGE WORK.

Viaduct for the New York & Long Branch Railroad over the Navesink river, 1,300 tons, expected to be awarded to the American Bridge Co. No award to be made until after substructure is disposed of.

Four bridges for Lehigh Valley railroad, 1,000 tons. Bids entered.

Additional terminal work, New York Central railway, New York City, 500 tons. Bids asked.

Won't Operate Furnace.—David W. Flickwir, Roanoke, Va., who recently purchased the West End furnace, Roanoke, Va., advises that there is no intention at this time of putting the plant in operation.

DEBATE BEGINS

On Tariff Bill—Duty Removed From Cast Iron Pipe.

Washington, July 15.—With tomorrow set as the date for the beginning of general debate in the senate on the tariff bill, there is every indication that it will be the object of as fierce an attack as was ever made upon any similar measure. It has been announced by Senators Smoot, La-Follette and Cummins that they will submit schedules, Mr. Cummins having prepared a metal schedule to substitute for the one just approved by the caucus. Senator LaFollette may offer an entire bill. Senator Simmons, chairman of the finance committee, has said the bill will pass in five weeks and Senator Smoot, Republican, has agreed with him. But this view has not met with full concurrence. There are many who think the bill will not be ready for passage short of six or eight weeks. It was reported to the senate last Friday by Senator Simmons. Minority reports are to be made also.

Several changes were made by the caucus in the metal schedule, it having undergone about the same proportionate number of changes as other schedules. The basket clause, as it affects iron and steel products, was cut from 25 per cent to 20 per cent. Another important change, which had been expected, places cast iron pipe of all descriptions on the free list. Cast iron pipe was made dutiable at 12 per cent by the house committee. The majority of the senate finance committee increased the duty to 15 per cent. No explanation has been made as to the reason for the peculiar juggling of this item. Some of the house provisions have been restored by the caucus, and working of some paragraphs has been revised.

One amendment by the caucus makes zinc-bearing ore of all kinds dutiable at 12½ per cent, an increase from 10 per cent in the house bill. This amendment provides that on all importations of zinc-bearing ores the duties shall be estimated at the port of entry, and a bond given for double the amount of the estimated duty for transporting the ores to sampling or smelting establishments, where they shall be assayed by agents of the government and import duties liquidated by customs officers.

Barrel Hoops Added.

In paragraph 109, dealing with hoops, bands, etc., the caucus made an amendment incorporating the words "and barrel hoops of iron or steel."

In paragraph 112 dealing with bars, stamped shapes not advanced in value or condition by any process subsequent to the process of stamping; hammer molds or swaged steel; gun barrel molds not in bars, molded steel castings, sheets and plates, the caucus restored the house words "all the foregoing, if made by the Bessemer, Siemens-Martin, open-hearth, or similar processes, not containing alloys, such as nickel, etc.," and increased the duty from 6 per cent, proposed by the finance committee, to 8 per cent. The house bill provided a duty of 10 per cent. Ingots, blooms, slabs, die blocks or blanks and billets, covered in this paragraph by the house bill with a 10 per cent duty, when made by the Bessemer, Siemens-Martin, open-hearth or similar processes, not containing alloys specified, remain on the free list. The remainder of the paragraph, dealing with ingots, billets, bars, molds, wire rods, etc., was cut from the finance committee provision of 12 per cent to 10 per cent.

In paragraph 116, dealing with wire, the caucus inserted the word "steel" in describing woven wire cloth, and specified the size by the words "30 mesh and above."

Paragraph 121, automobiles, has been changed again. Cars are divided into three classes and the duty cut on the cheaper autos.

In the committee amendments one division of this paragraph read: "Finished automobiles valued at less than $1,500, 30 per centum," and in the caucus amendment the words "and more than $1,000" are inserted before 30 per centum, and a second addition provides "unfinished automobiles valued at $1,000 or less, 15 per centum, ad valorem.

House Provision Restored.

In paragraph 142, screws, the house provision, making a general classification, and fixing a duty of 25 per cent, is restored. The finance committee classified screws, and made two duties, one at 10 per cent and the other at 25 per cent.

Paragraph 144, wheels, has been cut from 25 to 15 per cent.

Paragraph 149, copper products, has been restored as it came from the house, except that the word "strips," inserted by the finance committee, remains. The amendment cut out: "And composition metal including brass, copper, and nickel alloys."

The basket clause, last paragraph, 169, has been cut from 25 to 20 per cent, affecting iron and steel and nonferrous metals.

HALF MILLION

Represents Decline in Unfilled Tonnage of Steel Corporation.

During the month of June, the United States Steel Corporation manufactured a total of 517,005 tons of finished products in excess of the new business entered. This tonnage represents the loss in unfilled bookings at the end of June shown in the monthly report issued at New York, July 10. The orders awaiting manufacture on June 30 were 5,807,317 tons. Since Jan. 1, 1913, the order book of the Steel Corporation has declined a grand total of 2,114,847 tons.

Statements of business on hand at the end of each month, together with the tonnage and percentage of increase or decline over the previous month, are as follows:

Date.	Total.	Change, tonnage.	Change, per cent.
June 31, 1913....	5,807,317	517,005—	8.18—
May 31, 1913....	6,324,322	654,440—	9.38—
Apr. 30, 1913....	6,978,762	490,194—	6.55—
Mar. 31, 1913....	7,468,956	187,758—	2.45—
Feb. 28, 1913....	7,656,714	170,654—	2.18—
Jan. 31, 1913....	7,827,368	104,796—	1.32—
Dec. 31, 1912....	7,932,164	79,281+	1.01+
Nov. 30, 1912....	7,852,883	258,502+	3.40+
Oct. 31, 1912....	7,594,381	1,042,874+	15.33+
Sept. 30, 1912....	6,551,507	388,132+	6.29+
Aug. 31, 1912....	6,163,375	206,296+	3.46+
July 31, 1912....	5,957,079	149,773+	2.58+
June 30, 1912....	5,807,346	56,363+	0.98+
May 31, 1912....	5,750,983	86,983+	1.52+
Apr. 30, 1912....	5 664.885	360,044+	6.97+
Mar. 31, 1912....	5,304,841	149,359—	2.79—
Feb. 29, 1912....	5.454,200	74,479+	1.38+
Jan. 31, 1912....	5,379,721	294,960+	5.71+
Dec. 31, 1911....	5.084,761	942,806+	23.24+
Nov. 30, 1911....	4,141,955	447,627+	12.06+
Oct. 31, 1911....	3,694,328	83,011+	2.25+
Sept. 30, 1911....	3,611.317	84,668—	2.34—
Aug. 31, 1911....	3.695,985	111,900+	3.33+
July 31, 1911....	3,584,085	223,027+	7.16+
June 30, 1911....	3.361,058	247,871+	7.96+
May 31, 1911....	3,113,187	105,617—	3.28—
Apr. 30, 1911....	3 218,704	228,597—	6.63—
Mar. 31, 1911....	3,447,301	46,758+	1.37+
Feb. 28, 1911....	3,400.543	289,624+	9.31+
Jan. 31, 1911....	3,110.919	436,162+	15.30+
Dec. 31, 1910....	2 674,757	85,656—	3.09—
Nov. 30, 1910....	2,760,413	111,536—	3.88—
Oct. 31, 1910....	2,871,949	286,157—	9.12—
Sept. 30, 1910....	3,159,106	379,088—	10.74—
Aug. 31, 1910....	3.537.128	433,803—	10.92—
July 31, 1910....	3,913,931	286,863—	6.72—

Will Remodel Dock.—The Great Lakes Coal & Dock Co., Duluth, expects to remodel its coal dock on the St. Louis bay water front and to install new unloading equipment. The new rig will be operated by electricity and will be provided with buckets of 5-ton capacity. The Great Lakes company occupies the dock formerly used by the Philadelphia & Reading Coal Co.

Taking Bids on Mill.—Bids are being taken by Howe & Samuel, Danville, Pa., for the construction work upon their new puddling works and rolling mill for the manufacture of high grade bars. The order for the boilers has been placed, but the purchase of a 350-horsepower Corliss steam engine is still open.

GOVERNOR'S PLANT

Will be Moved on Account of New Tariff Policy.

Eugene N. Foss, Democratic governor of Massachusetts, strongly criticizes the Democratic national administration in a statement announcing that the B. F. Sturtevant Co., Hyde Park, Mass., which he controls, will move to Canada.

He asserts the administration is, by indefensible tariff principles, frittering away opportunities to help the business interests of the country.

The Sturtevant company, which is a large maker of blowing apparatus, has bought a plant at Galt, Ont., and, Governor Foss says, a large part of the work which has been done at Hyde Park will be done at the new plant.

His statement, in part, is as follows:

"For more than 12 years one of the principal Massachusetts corporations, which I represent, has had under consideration a plan of transferring to Canada a large portion of its work. I have personally opposed this plan and endeavored to maintain this industrial enterprise, in full, here in Massachusetts, but am now convinced that it is no longer possible to defer action on this matter.

Buys Canadian Plant.

"Accordingly, I make the announcement, although I do so with sincere regret, that the B. F. Sturtevant Co. has just completed the purchase of a manufacturing plant in Galt, Ont., and that a large part of the work which has hithereto been done at Hyde Park will now be transferred to Canada."

"All over the United States the tendency among the principal manufacturing interests is toward the establishment of plants in Canada. This movement has been going on for many years, and its is estimated that from three to five hundred million dollars of American capital is now invested in these Canadian plants. The Sturtevant company must join the procession in order to meet the conditions of the industry, for the movement has now proceeded to a point where corporations which fail to follow are faced with serious embarrassment. American manufacturers have completely filled the American market, and their production is now greatly in excess of the domestic demand. Under these conditions, the expansion of their domestic plants is impossible, and it is becoming necessary for them to curtail production.

Unless the Washington Construction Co., Seattle, is willing to substitute Seattle manufactured steel for an eastern product, the board of public works threatens to reject all bids for the construction of a concrete retaining wall and viaducts of the Queen Anne boulevard improvement, and call for new proposals. The contract calls for the use of 300 tons of steel, the Washington Construction Co. bidding $96,419.85 for the job.

OBITUARIES

William B. Hughes, inventor of the Hughes stoking gas producer, gas engineer of the Wellman-Seaver-Morgan Co., and a man well known in the iron and steel business, died, July 9, of heart failure, at his home in Cleveland, at the age of 54 years.

Mr. Hughes was born in Philadelphia in 1859. He was educated in the public schools and at Franklin Institute. He served his apprenticeship with Thomas Shaw, Philadelphia, well known engineer and inventor. In 1882, he entered the employ of the Pencoyd Iron Works, where he devoted his time and attention

WM. B. HUGHES

to the development of machinery used in making steel products.

Mr. Hughes held 105 patents. One of the first was a small lifting hydraulic riveter, which facilitated riveting deep girders. This patent was bought by R. D. Wood & Co. In the development of special bridge shop tools, Mr. Hughes patented a drilling and reaming machine, which now is used at a well known bridge shop.

It was at his suggestion that brackets were arranged at the base of a self-supporting stack. His best known patent is the Hughes gas producer. These producers are used by the leading steel companies of this country. Among his other inventions are the Hughes gas valve, a device for shearing ingots into billets and blooms and a process for furnace lining.

Mr. Hughes had been ill since last February. He is survived by his widow, a daughter, Mrs. Papper, Philadelphia, and a son, William, now a student at Yale. The funeral was held Saturday afternoon.

Frederick W. Gordon, 71 years old, metallurgist and mechanical engineer, died at his country home at Fort Washington, near Philadelphia, July 11.

Hugh White, general manager of the Duncannon Iron & Steel Co., Duncannon, Pa., died at the Harrisburg hospital recently from the result of injuries sustained when struck by a railroad car.

Joseph Dickinson, a metallurgical engineer, who was in charge of testing and experimental work of the Henry Disston & Sons Co., Philadelphia, died July 12 at his home in Germantown, Pa., after a long illness. He was 59 years of age.

Charles B. Lipphart, aged 35, formerly connected with Westinghouse interests in Pittsburgh, and later with the York Bridge Co., York, Pa., died recently at his home in East Orange, N. J. He was connected with the Edison interests at the time of his demise.

John Semple Jr., aged 82, for many years cashier of the Jones & Laughlin Steel Co., died July 11, at Pittsburgh. He was appointed chief clerk of the invoicing department of the company in 1869, and in 1892 became cashier, retiring in 1897. One of his sons, Harry G. Semple, is now in the sales department of the Jones & Laughlin company.

William Brunow, manager of the Chicago branch of the Geuder, Paeschke & Frey Co., Milwaukee, Wis., died at his home in Milwaukee, on July 6, aged 61 years. Mr. Brunow became an employe 35 years ago, and rose from the bench to the position of head of the most important branch house of this company. Mrs. Brunow died about 10 months ago and Mr. Brunow never fully recovered from the shock.

America's First Safety Exposition

The first international exposition of safety and sanitation ever held in America will take place in New York City, Dec. 11 to 20, 1913, under the auspices of the American Museum of Safety. Safety and health in every branch of American industrial life, manufacturing, trade, transportation on land and sea, business, engineering, in all of their sub-divisions will be represented at this exposition. It will be the first step toward making a representative exhibition of the progress of safety and preventive methods in America.

IRON AND STEEL PRICES

Pig Iron

PITTSBURGH

(Through This Year.)

Bessemer	$16.65 to 16.90
Basic	15.40
No. 2 foundry	14.90
Malleable	15.15
Gray forge	14.65

The freight rate from valley points is 90c.

CLEVELAND

(Through this Year Delivered in City.)

No. 1 foundry	$15.25
No. 2 foundry	14.75
No 2 southern	14.85 to 15.35
Bessemer	16.90
Silveries 8 per cent silicon	20.55

CINCINNATI

(Through This Year.)

Southern foundry No. 1	$14.25 to 14.75
Southern foundry No. 2	13.75 to 14.25
Southern foundry No. 3	13.25 to 13.75
Southern foundry No. 4	13.00 to 13.50
Southern gray forge	12.75 to 13.25
Mottled	12.75 to 13.00
Southern No. 1 soft	14.25 to 14.75
Southern No. 2 soft	13.75 to 14.25
Standard southern car wheel	27.25 to 27.75
Southern Ohio No. 2	15.45 to 16.20
Southern No. 3	14.95 to 15.70
Southern Ohio No. 4	14.70 to 15.45
Silveries 8 per cent silicon	19.70 to 20.20

(Freight from Ironton, $1.20; from Birmingham, $3.25.)

CHICAGO

(Delivered Chicago, this year, except northern foundry and malleable Bessemer, which are quoted f. o. b. local furnaces.)

Lake Superior charcoal	$16.75
Northern foundry No. 2	15.00
Southern foundry No. 2	14.85 to 15.35
Jackson co. silveries, 8 per cent	20.40
South'n silverics, 5 per cent sil.	17.35
Alabama basic	14.85
Malleable	14.75

PHILADELPHIA

(Prompt and third quarter shipment delivered to consumer's plants, in Philadelphia and vicinity, unless otherwise specified.)

Northern No. 1X foundry	$16.00 to 16.25
Northern No. 2X foundry	15.50 to 16.00
Northern No. 2 plain	15.25 to 15.50
Standard forge (Eastern Pa.)	14.75 to 15.00
Virginia No. 2X	16.30
Southern No. 2	15.00 to 15.50
Standard low phos., Phila	23.25 to 23.50
Lebanon low phos., furnace	18.50 to 19.00
Malleable	16.25 to 16.50
Basic (Eastern and Central Pa.)	15.25 to 15.50

NEW YORK

(Prompt and third quarter delivery, prices based at Jersey City and tidewater.)

Northern No. 1X foundry	$15.75 to 16.00
Northern No. 2X foundry	15.50 to 15.75
Northern No. 2 plain	15.25 to 15.50
Virginia No. 2X	16.30
Southern No. 2	15.25 to 15.75
Malleable	15.75 to 16.00
Gray forge	15.00 to 15.25

ST. LOUIS

(Throughout this year.)

Southern No. 1	$14.75 to 15.25
Southern No. 2	14.25 to 14.75
Southern No. 3	13.75 to 14.25
Southern No. 4	13.25 to 13.75

(Freight, Birmingham to St. Louis, $3.75.)

BIRMINGHAM

(For southern delivery.)

No. 1 foundry	$11.50
No. 2 foundry	11.00
No. 3 foundry	10.50
No. 4 foundry	10.25
Gray forge	10.25
Mottled	10.25
Standard basic	11.50
Off basic	11.00
Charcoal	25.00

BUFFALO

(Through this year, delivered in city.)

No. 1 foundry	$14.00 to 14.25
No. 2X foundry	14.00
No. 2 plain	13.75
No. 3 foundry	13.75
Gray forge	13.75
Malleable	14.00 to 14.25
Basic	14.00 to 14.50
Charcoal	16.00 to 17.00

Ferro Alloys

English and German 80 per cent ferro-manganese, prompt delivery $57 to $58.50 seaboard; forward delivery $58.50 seaboard.

Fifty per cent ferro-silicon on contracts, $75, Pittsburgh, or Philadelphia, for carloads; $74 for larger lots and $73 for 600 tons or more. Twelve to 13 per cent, $26. Eleven to 12 per cent, $25. Ten to 11 per cent, $24. Nine to 10 per cent, $23, f. o. b. Globe, Jisco and Ashland furnace. Freight to Pittsburgh, $1.90.

Ferro-carbon titanium 8 cents per pound for carload lots; 10 cents per pound for 2,000-pound lots and over; 12½ cents per pound in lots up to 2,000 pounds.

Freight rates on ferro-manganese, foreign spiegeleisen and electrolytic ferro-silicon from Baltimore to Pittsburgh, $2.16; to Youngstown, $2.48; to Cleveland, $2.57; to Detroit and Columbus, $2.99; to Cincinnati, $3.40; to Chicago and Milwaukee, $4.00. Freights from Philadelphia and New York, 10 to 30 cents higher respectively.

Freight Rates, Finished Material

From Pittsburgh, carloads, per 100 pounds, to:—

New York	16 cents
Philadelphia	15 cents
Boston	18 cents
Buffalo	11 cents
Cleveland	10 cents
Cincinnati	15 cents
Chicago	18 cents
St. Louis	22½ cents
Denver	84½ cents
New Orleans	30 cents
Birmingham	45 cents
Pacific coast, shapes and plates	80 cents
Pacific coast, sheets, No. 11 and heavier	80 cents
Pacific coast, sheets, Nos. 12 to 16	85 cents
Pacific coast, sheets, No. 16 and lighter	95 cents
Pacific coast, wrought pipe and boiler tubes	65 cents

Coke

AT THE OVENS.

	Prompt shipment.	Contract.
Connellsville district:		
Foundry coke	$2.85 to 3.10	$3.00 to 3.10
Furnace Coke	2.50	2.05
Wise county district:—		
Foundry coke	$2.60 to 2.75	$2.75 to 3.00
Furnace coke	2.25 to 2.50	2.25 to 2.50
Pocahontas district:—		
Foundry coke	$2.75 to 3.00	$2.75 to 3.00
Furnace coke	2.35 to 2.50	2.50
New River district:—		
Foundry coke	$3.25 to 3.50	$3.25 to 3.50
Furnace coke	2.50 to 2.60	2.60 to 2.90

Iron Ore

On base ores with the guarantee of 55 per cent on old range and Mesabi Bessemer, and 51½ per cent on old range and Mesabi non-Bessemer, $4.40; Mesabi Bessemer, $4.15; old range non-Bessemer, $3.60; Mesabi non-Bessemer, $3.40; all at lower lake ports.

Foreign iron ores, 7½ to 8 cents per unit, f. o. b. cars eastern seaboard. Freight rates from Philadelphia to eastern Pennsylvania, furnace points range from 35 to 75 cents per ton.

Semi-Finished Material

PITTSBURGH

For prompt and forward delivery, Bessemer 4 x 4 billets with 0.25 carbon and less, $26.50 to $27.00; open-hearth rolling billets, $26.50 to $27.00; Bessemer sheet and tin bars, $27.50; open-hearth sheet bars, $27.50, f. o. b. Pittsburgh and Youngstown. Forging billets, $33, Pittsburgh. Wire rods, $29 to $30; muck bar, $31, Pittsburgh.

PHILADELPHIA

Delivered to consumers' plants in Philadelphia and vicinity; 4 x 4-inch open-hearth and Bessemer rolling billets at $28 to $29, and forging billets at from $33 to $35.

Standard Shapes

PITTSBURGH

Standard structural shapes, 1.45c. For extras see card of Sept. 1, 1909.

CHICAGO

Standard structural shapes, 15 inch and under, 1.63c.

PHILADELPHIA

Delivered to consumers in Philadelphia and vicinity. Standard structural shapes from eastern Pennsylvania mills, 1.60c to 1.65c. From Pittsburgh mills, 1.60c.

NEW YORK

Standard structural shapes delivered at New York by eastern Pennsylvania makers 1.61c to 1.66c. On forward delivery, Pittsburgh district makers are quoting from 1.61c to 1.66c, New York.

Plates

PITTSBURGH

Standard steel plates ¼ inch thick, 6¾ to 100 inches, 1.45c. For extras, see card of Sept. 1, 1909.

CHICAGO

Tank plates, 1¼ inch thick, 6⅝ to 100 inches wide, 1.63c.

PHILADELPHIA

Delivered to consumers' plants in Philadelphia and vicinity. Tank plates from eastern Pennsylvania mills for prompt or forward delivery 1.65c to 1.75c. From Pittsburgh mills, tank plates 1.60c to 1.65c.

NEW YORK

Steel plates, tank quality, for prompt and forward delivery at New York by eastern Pennsylvania makers, 1.66c to 1.76c. Pitts-

burgh makers are quoting 1.61c to 1.66c, New York.

Sheets and Tin Plate

PITTSBURGH

No. 28 black	2.25c to 2.35c
No. 28, tin mill black	2.30c
No. 28, galvanized	3.30c to 3.50c
No. 10, blue annealed	2.45c to 2.55c
No. 28 painted, corrugated	2.45c to 2.55c
No. 28, galvanized, corrugated	3.40c
Tin plate, 100 pound cokes	$3.60

PHILADELPHIA

Delivered to consumers' plants in Philadelphia and vicinity: No. 10 gage annealed sheets at 1.90c.

Pipe and Boiler Tubes

PITTSBURGH

	Black. Butt.	Galv. Weld.
Steel, ¾ to 3 inches	79	70½
Iron, ¾ to 2½ inches	72	61
BOILER TUBES.		
Steel, 3½ to 4½ inches	69	..
Iron, 3½ to 4½ inches	58	..

Other sizes of pipe and tubes take the usual advances as per official cards.

Rails and Track Material

PITTSBURGH

Steel rails, 50-pound and heavier, 1.25c per pound for Bessemer and 1.34c for open-hearth; carload lots less than 500 tons 1.34c per pound; light rails on base weight of 40 to 45 pounds, 1.25c, schedule on the other weights being irregular and subject to negotiations; angle bars for standard sections, 1.50c base, Pittsburgh; track bolts, 2.40c base, Pittsburgh.

Railroad spikes, 4½, 5 and 5½ and 9-16 inch, 1.70c to 1.80c.

CHICAGO

Light rails, carloads, 25 to 45-pound, 1.25c, base; 16 to 20-pound, 1.30c; 12-pound, 1.35c; 8-pound, 1.40c.

Light section relayers, 45 pounds and under, subject to inspection, $22 and $23; standard section relaying rails, subject to inspection, $23 to $24.

Track fastenings, f. o. b. Joliet:

Angle bars, 1.50c; railroad spikes, 1.80c to 1.85c; smaller size spikes, 1.90c, base; track bolts, with square nuts, 2.30c to 2.40c.

Bars, Hoops and Bands

PITTSBURGH

Common iron bars, 1.65c to 1.70c, Pittsburgh; Bessemer and open-hearth steel bars, 1.40c; plow and cultivator 1.40c; channels, angles, zees, tees, under 3 inch, 1.50c all f. o. b. mill.

Hoops in carload lots, 1.60c, Pittsburgh; in less than carload lots, 1.65c; bands, 1.40c, base, with net extras, as per standard steel.

Cold rolled and ground shafting, 60 per cent off in carloads and 55 per cent in less than carloads delivered in base territory.

CHICAGO

Bar iron 1.50c to 1.55c; hard steel bars rerolled, 1.55c; soft steel bars, bands and small shapes, 1.58c; hoops, 1.63c; smooth finished machinery steel, 1 inch and larger, 1.78c; shafting, 58 per cent off list for carload lots, 53 per cent off for less than carloads.

PHILADELPHIA

Delivered in consumers' plants in Philadelphia and vicinity: Steel bars 1.55c to 1.60c on contract and common bar iron, 1.37½ to 1.47½c. Prompt steel bars on mill shipments, 1.85c to 1.90c, delivered. Cut nails 1.90c to 1.95c, Philadelphia. Shafting 62 and 60 and 57 and 55 off in base territory.

NEW YORK

Delivered in New York, steel bars on contract from 1.56c to 1.61c, and common iron bars, 1.33c to 1.45c.

Bolts, Nuts and Rivets

Rivets

Button head structural rivets, 2.10c, Pittsburgh, cone head boiler rivets, 2.20c. Small rivets, 75, 10 and 10 off.

Structural rivets, Chicago, 2.08c; boiler rivets, 0.10c extra.

Bolt and Nut Discounts

(Delivered within a 20-cent freight radius.)

Carriage bolts, ⅜ x 6 inches, smaller and shorter, rolled threads, 75 and 10; cut threads 75 and 5; larger and longer, 70 and 2½.

Machine bolts with hot pressed nuts, ⅜ x 4 inches, smaller and shorter, rolled 75, 10 and 5; cut, 75 and 10; larger and longer, 70 and 7½.

Gimlet and cone point lag or coach screws, 80 and 10.

Hot pressed square, blank or tapped nuts, $5.70 off list; hot pressed hexagon blank or tapped, $6.30.

Cold pressed C. & T. square, blank or tapped, $5.70 off; hexagon, blank or tapped, ⅜-inch and larger, $6.60 off; ½-inch and smaller, $7.20 off.

Wire Products

PITTSBURGH

Wire nails, jobbers' carload lots, $1.70 to $1.80, retailers' carload lots, $1.75 to $1.85, cut nails (western makers), jobbers' lots, $1.70; painted barb wire, jobbers' carload lots, $1.70 to $1.80; retailers' carload lots, $1.75 to $1.85; plain wire to jobbers in carloads, $1.50 to $1.60; and to dealers in carloads, $1.55 to $1.65; polished staples, $1.70 to $1.80; galvanized staples, $2.10 to $2.20.

CHICAGO

Wire nails, jobbers' carload lots, $1.98; retailers' carload lots, $2.03; retailers' less than carload lots, $2.08; painted barb wire, jobbers' carload lots, $1.98; retailers' carload lots, $2.03; retailers' less than carload lots, $2.08, with 40c for galvanizing; plain wire, jobbers' carload lots, $1.73; retailers' carload lots, $1.78.

Cast Iron Pipe

CHICAGO

Four-inch water pipe, $28; 6 to 12 inches, $27; larger sizes, $25; gas pipe, $1 a ton higher.

NEW YORK

Six-inch pipe, 30 pounds to the foot, $23 to $25, f. o. b. New York, in carload lots.

BIRMINGHAM

Water main: 4-inch, $21.50; 6-inch and up, $20.50. Gas main: $1 per ton higher than water main. Special fittings, $47.50 to $52.50.

Old Material

PITTSBURGH

(Gross tons delivered.)

Heavy melting scrap	$12.50
Rerolling rails	14.50 to 15.00
Malleable	11.50 to 11.75
Bundled sheet scrap	9.00 to 9.25
Iron axles	22.00 to 23.00
Old iron rails	13.50 to 14.00
Stove plate	9.00 to 9.25
No. 1 wrought scrap	13.00 to 13.50
Old car wheels	12.50 to 13.00
Low phosphorus	15.50 to 16.00
Machine shop turnings	6.50 to 7.00
No. 1 busheling	11.50 to 12.00
Cast borings	8.25 to 8.50
No. 1 cast scrap	12.00 to 12.50

PHILADELPHIA

Gross tons delivered to consumers' plants in eastern Pennsylvania and western New Jersey:

Old iron rails (nominal)	$17.00 to 17.50
Old steel rails (rerolling)	14.50 to 15.00
No. 1 heavy melting steel	11.25 to 11.75
Old car wheels	12.00 to 12.50
Old iron axles (nominal)	25.00 to 26.00
Old steel axles (nominal)	17.50 to 18.00
No. 1 railroad wrought	14.00 to 14.50
Wrought pipe	11.00 to 11.50
Cast borings	8.00 to 8.50
Machine shop turnings	8.00 to 8.50
Heavy cast (broken)	13.00 to 13.50
Malleable	12.00 to 12.50
Stove plate	9.50 to 10.00
No. 1 forge	9.50 to 10.00
Low phosphorus	15.00 to 15.50

Freight rates per ton on scrap from Philadelphia to principal eastern consuming points are: $0.60 to Ivy Rock, Pa.; $0.65 to Phoenixville, Pa.; $0.80 to Coatesville, Pa.; $0.85 to Bethlehem, Pa., Reading, Pa., and Roebling, N. J.; $1.10 to Pottsville, Pa., Lebanon, Pa., and Columbia, Pa.; $1.20 to Harrisburg and Steelton, Pa.; $1.40 to Milton, Pa.

CLEVELAND

Gross Tons

Old iron rails	$15.00
Old steel rails (under 3 ft.)	13.00 to 13.50
Old steel rails (over 6 ft.)	12.75 to 13.25
Relaying rails	23.00 to 25.00
Old steel boiler plate	9.00 to 9.50
Malleable iron (railroad)	11.75 to 12.00
Axle turnings	7.50 to 8.00
Steel axles	18.00 to 19.00
Malleable iron (agricultural)	9.00 to 9.50
Heavy steel	11.00 to 11.25
Country mixed steel	9.00 to 9.50
Bundled sheet scrap	8.00 to 8.50

Net Tons

No. 1 R. R. wrought	$11.50 to 12.00
No. 1 busheling	9.50 to 9.75
No. 1 machine cast	11.50 to 12.00
No. 1 dealers' wrought	9.00 to 9.50
Machine shop turnings	4.00 to 4.25
Pipes and flues	7.50 to 8.00
Wrought drillings	4.00 to 4.25
Cast borings	5.50 to 6.00
Stove plate	7.75 to 8.25
Wrought iron arch bars	16.00
Wrought iron piling plate	14.00

CHICAGO

(Delivered in consumers' yards.)

Gross Tons.

Old car wheels	$13.50 to 14.00
Old iron rails	13.75 to 14.25
Rerolling rails (5 ft. and over)	12.00 to 12.50
Old steel rails (3 ft. and und.)	11.00 to 11.50
Frogs, switches and guards	10.50 to 11.00
Heavy melting steel	10.50 to 11.00
Shoveling steel	10.00 to 10.50

Net Tons.

No. 1 R. R. Wrought	$10.50 to 11.00
No. 2 R. R. wrought	9.75 to 10.25
Arch bars and transoms	13.50 to 14.90
Knuckles, couplers and springs	10.75 to 11.25
Shafting	14.25 to 14.75
Iron car axles	19.50 to 20.00
Steel car axles	16.50 to 17.00
Locomotive tires	12.00 to 12.50
Dealers' forge	10.00 to 10.50
Pipe and flues	7.25 to 7.75
No. 1 cast	10.75 to 11.25
No. 1 busheling	8.50 to 9.00
No. 2 busheling	6.50 to 7.00
No. 1 boiler cut	8.25 to 8.75
Boiler punchings	12.00 to 12.50
Cast and mixed borings	4.50 to 5.00
Machine shop turnings	4.75 to 5.25
Railroad malleable	11.00 to 11.50
Agricultural malleable	10.00 to 10.50
Angle bars, splices, etc., iron	13.00 to 13.50
Angle bars, steel	10.00 to 10.50
Stove plate and light cast scrap	8.75 to 9.25

NEW YORK

Gross tons, New York dealers' prices at tidewater, usually, for Eastern Pennsylvania delivery:

Old car wheels (nominal)	$10.50 to 11.00
Steel axles	15.00 to 15.50
Old steel shafting	13.50 to 14.00
No. 1 heavy melting steel	9.00 to 9.25
No. 1 R. R. wrought	11.75 to 12.00
Wrought pipe (not galvanized)	8.25 to 8.75
Cast borings	5.50 to 5.75
Machine shop turnings (nom.)	5.50 to 5.75
Heavy cast	10.75 to 11.00

Stove plate	7.50 to 7.75
Grate bars	6.25 to 6.50

Freight rates on scrap per ton to Steelton, Pa., Columbia, Pa., Pottsville, Pa., and Harrisburg, Pa., are $1.50 from Jersey City, and $2.00 from New York; to Coatesville, Pa., Ivy Rock, Pa., Phoenixville, Pa., and Reading, Pa., $1.50 from Jersey City, and $1.80 from New York; to Bethlehem, Pa. $1.10 from Jersey City, and $1.60 from New York; to Roebling, N. J., $1.00 from Jersey City, and $1.50 from New York; to Milton, Pa., $1.60 from Jersey City, and $2.00 from New York; to Jersey City, $1.00 from New York; to Newark, $1.10 from New York.

CINCINNATI

Gross Tons.

Old iron rails	$11.50 to 12.00
Old steel re-rolling	10.00 to 10.50
Old iron axles	16.00 to 16.50
Heavy melting scrap	9.00 to 9.50
Relaying rails	18.75 to 19.25

Net Tons.

Old No. 1 R. R. wrought	$9.00 to 9.50
Bundled sheet scrap	5.00 to 5.50
No. 1 yard wrought	6.75 to 7.25
No. 1 machine cast	9.50 to 10.00
No. 1 busheling	7.00 to 7.50
Stove plate	6.75 to 7.25
Machine shop turnings	5.00 to 5.50
Cast borings	4.50 to 5.25
Heavy turnings	5.25 to 5.75
Mixed cast	7.75 to 8.25
Breakage	5.50 to 6.00
Malleable	7.00 to 7.50

BIRMINGHAM

Old iron axles, (light)	$15.00 to 15.50
Old steel axles, (light)	15.00 to 15.50
Old iron rails	12.50 to 13.50
No. 1 R. R. wrought	12.00 to 12.50
No. 2 R. R. wrought	10.00 to 10.50
No. 1 country wrought	9.50 to 10.00
No. 2 country wrought	8.50 to 9.00
No. 1 machinery cast	9.50 to 10.00
No. 1 steel scrap	10.50 to 11.00
Standard car wheels	12.00 to 12.50
Tram car wheels	10.50 to 11.00
Light cast and stove plate	8.25 to 8.75

BUFFALO

(Gross Tons.)

Heavy melting steel	$11.00 to 11.50
No. 1 R. R. wrought scrap	13.00 to 13.50
No. 1 R. R. and mch. cast scrap	13.00 to 13.50
Old steel axles	17.00 to 17.50
Old iron axles	22.50 to 23.00
Car wheels	13.00 to 13.50
Railroad malleable scrap	12.50 to 12.75
Wr'ght iron and soft steel turn.	6.00 to 6.50
Cast iron borings	6.00 to 6.50
Low phos. steel scrap	16.50 to 17.00
Old iron rails	15.00 to 15.50
Boiler plate, sheared	13.00 to 13.75
Bundled sheet scrap	8.50 to 9.00
Stove plate (net ton)	9.75 to 10.00
Locomotive grate bars	10.00 to 10.50
No. 1 busheling scrap	10.50 to 11.00
No. 2 busheling scrap	8.00 to 8.50

ST. LOUIS

(Dealers' buying prices.)

Gross Tons

Old car wheels	$11.50 to 12.00
Old iron rails	11.00 to 11.50
Rerolling rails (5 ft. and over)	12.00 to 12.25
Old steel rails (3 ft. and und.)	10.50 to 11.00
Light sec. relayers (45 pounds and und.) subject to inspec.	23.50 to 24.50
Relaying rails, subject to inspec.	23.50 to 24.50
Frogs, switches and guards	10.00 to 10.50
Heavy melting steel	9.50 to 10.00
Shoveling steel	9.00 to 9.25

Net Tons

No. 1 railroad wrought	$9.00 to 9.50
No. 2 railroad wrought	8.25 to 8.75
Arch bars and transoms	12.00 to 12.50
Knuckles, couplers, springs	9.00 to 9.50
Shafting	13.00 to 13.50
Steel car axles	15.00 to 15.50
Iron car axles	17.50 to 18.00
Locomotive tires	9.50 to 10.00
Pipe and flues	5.50 to 6.00
Tank iron and cut boilers	6.50 to 7.00
No. 1 cut busheling	7.50 to 8.00
Cast and mixed borings	3.50 to 4.00
Machine shop turnings	5.00 to 5.50
Railroad malleable	7.50 to 8.00
Agricultural, malleable	6.50 to 7.00
Stove plates	7.00 to 7.50
Angle splice bars (iron)	10.00 to 10.50
Angle splice bars (steel)	9.00 to 9.50

Store Prices

CINCINNATI

Steel bars, 2c; iron bars, 1.90c; plates and shapes, 2.10c; sheets, blue annealed No. 10, 2.40c; black, No. 28, 2.85c; galvanized, No. 28, 3.95c; cold rolled shafting, round, square, hexagon and flat, 50 off.

CLEVELAND

Steel bars, 2.00c; plates and shapes, 2.10c; iron bars, 2.00c; sheets, No. 10 blue annealed, 2.40c; No. 28 black, 2.85c; No. 28 galvanized, 3.95c.

CHICAGO

Steel bars, 1.85c; iron bars, 1.85c; hoops, 2.50c; shapes and plates, 1.95c; No. 10 blue annealed sheets, 2.25c; black, No. 28, 2.90c; galvanized, No. 28, 4.15c.

PHILADELPHIA

Steel bars, 2.05c to 2.10c; structural shapes, 2.00c to 2.10c; plates, 2.00c to 2.10c.

NEW YORK

Steel bars, 2.05c; structural shapes, 2.15c; plates, 2.15c.

ENJOINS STRIKERS

Judge Makes Decision Against Union and Orders Damages Paid.

Indianapolis, Ind., July 15.—A decision enjoining the iron molders' union from interfering with the affairs of the Keyless Lock Co., of this city, and granting the company a judgment of $6,000 against the union, for damages, has been handed down by Special Circuit Judge W. W. Thornton. A decree to be entered in the case later may enjoin the union from picketing the company's plant, peacefully or otherwise.

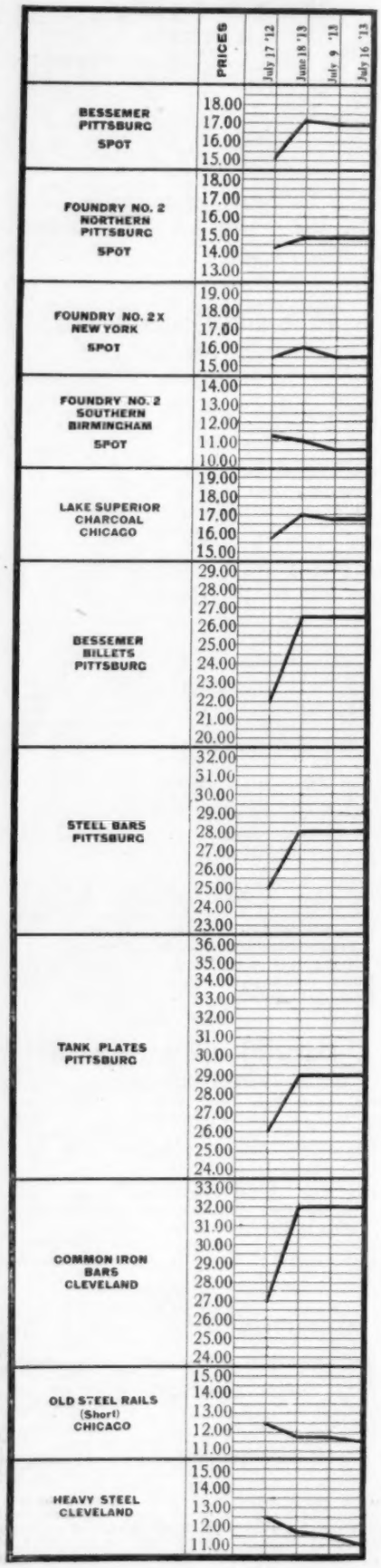
Iron molders of the company have been on strike since Nov. 14. After a number of the employes of the company had been attacked and intimidated, Arthur Jordan and Arthur R. Baxter, proprietors, brought suit against the union to enjoin it from interfering with the company's business and asking damages.

Admitted to Partnership

John C. Cosgrove has been admitted to partnership in the firm of Robert C. Lea & Co., 426 Stephen Girard building, Philadelphia, and it is announced the firm will conduct a general business for the sale of furnace and foundry coke and smithing coal of the Hastings Coal & Coke Co. The firm also continues as sole agent for Robesonia low phosphorus pig iron.

A new lathe, claimed to be the longest yet built, has just been installed at the plant of the Lodge & Shipley Machine Tool Co., Cincinnati, by the G. A. Gray Co., Cincinnati.

PRICE CHART



Making Dies Used in the Die-Casting Process

How the Permanent Molds Used in the Production of White Metal Parts Are Designed and Manufactured

The die-casting or extrusion process of producing white metal parts of which thousands of duplicates are made, is of comparatively recent origin, dating back only about 10 years. This process has been widely adopted and is employed on an extensive scale in the production of cast parts for cameras and automatic photographing machines, for magnetos, motor starting devices, electric lighting systems, speedometers, automatic vending machines, time controlling devices, counting machines, cash registers, water circulating and force-feed oil pumps, carburetors, piano players, roller and ball bearings, gas meters, typewriters, precision instruments of various kinds and for many other purposes. This partial list of castings reflects the wide range of usefulness of the die-casting method.

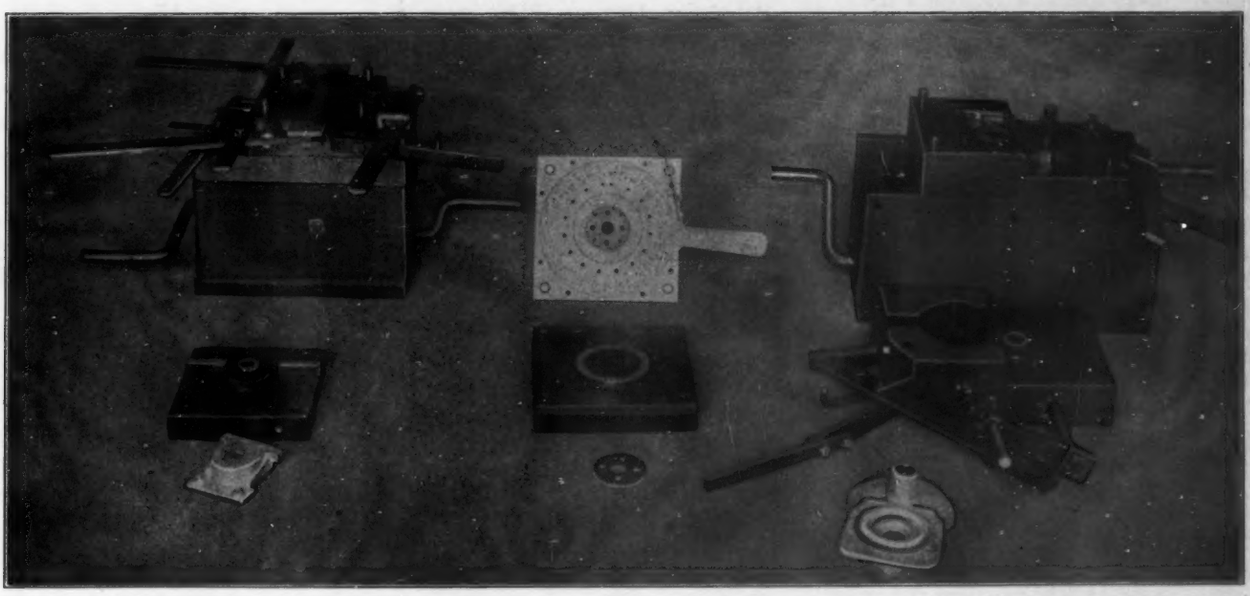


FIG. 1—THREE TYPICAL DIES USED ON DIE-CASTING MACHINES, THE CASTINGS ARE SHOWN IN FRONT OF EACH SET OF DIES

Briefly, die-castings are made in metal dies instead of in sand. The dies are mounted on a casting machine and into them the metal, under pressure, is forced. The dies are so constructed, that by the operation of levers and ejectors, they open after each cast and the casting is released from the dies automatically. The time required to produce a casting, depends, in large measure, upon the skill of the workmen and also upon the form and size of the casting being made. The output varies from 50 per day for the most complicated castings to 1,500 per day for simple pieces which are cast in a multiple die.

The Die

The die, of course, is the factor of prime importance in the success of this process, this being based almost entirely on the way in which the die is designed and on the accuracy of its dimensions. For the designing of dies, the Doehler Die Casting Co., Court and Ninth streets, Brooklyn, N. Y., maintains a staff of draughtsmen working under the direction of a mechanical engineer who is a specialist in the laying-out and construction of dies for this work. The first step in designing the die for a particular casting is to determine the best position for the mold in the die. There are several positions, as a rule, in which the mold and gate may be cut and one of these is generally to be preferred for reasons which affect the finish and density of the resulting casting. The correct method may involve the least or the most possible labor and expense; since the quality of the casting, however, depends so largely upon the construction of the die, it is the practice of the Doehler company to consider results in preference to cost. Occasionally after a die has been finished, it is found that blow-holes, or other defects occur in the castings. It is then necessary to change the position of the gate or to make such other changes which will result in the elimination of the defects. Figs. 3 and 5 show plans and sectional views of cam ring and magneto front plate dies.

The time required to make a die varies from one week to two or three months, depending on the amount of labor involved. A simple bearing die can be produced at a cost of $50, while a die for an unusually complicated casting frequently entails an expense of more than $1,000. As a rule, high grade machinery steel is used, although some dies are made of cast iron and lined with steel; in some cases, the latter combination proves more satisfactory and is more durable. The process of making a die involves precision machine and hand work, as the dimensions must be accurate within less than one-thousandth of an inch.

All dies are provided with ejector pins which are pushed into the die after the cast, thereby ejecting the casting. These pins are mounted on a plate and penetrate through one side of the die. Oil holes and recesses in castings are made by steel bars or rods and are known as cores. These cores form a part of the die. After

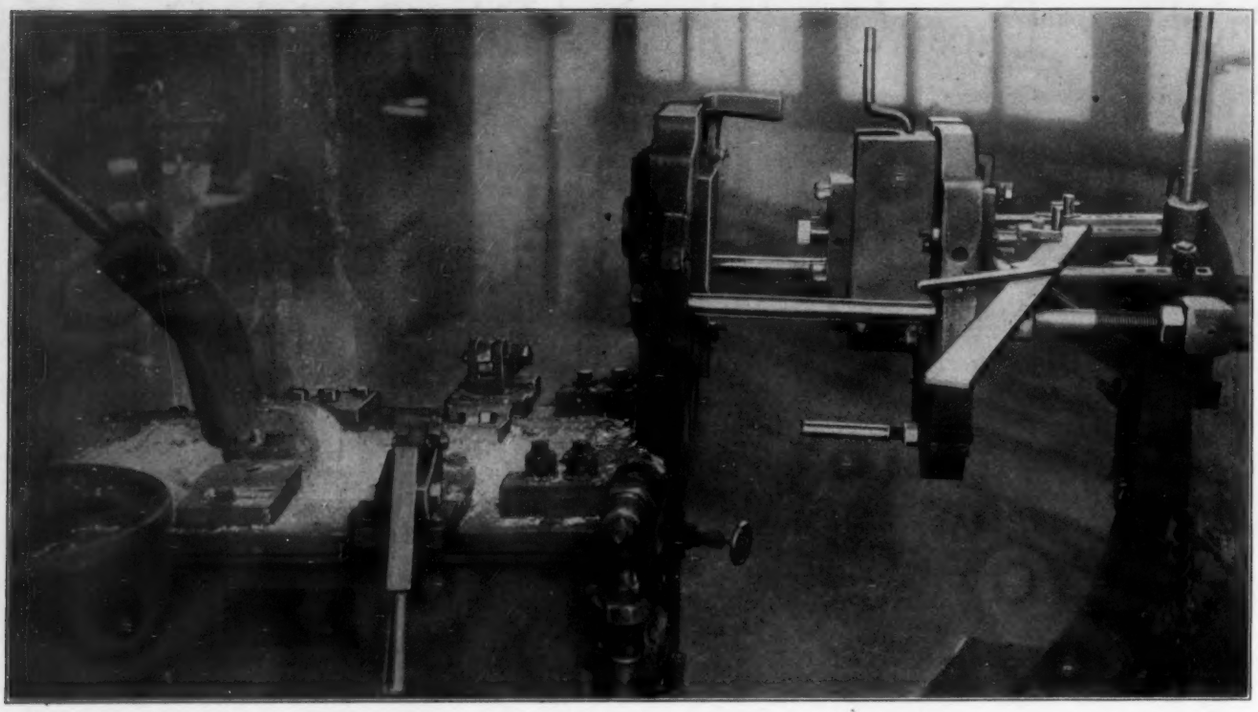


FIG. 2—DIE-CASTING MACHINE, SHOWING THE DIE OPENED AFTER A CAST. THE CASTING IS ABOUT TO BE EJECTED

the die has been closed and is ready for the cast, these cores are pushed into place, being pulled out again after the cast and before the die is opened for the removal of the casting. Frequently, there are a number of these cores in one die and occasionally one core is designed to pass through a hole in another core. In order that the workman who superintends the operation of the casting machine may not withdraw one core before the other has been pulled out, thus seriously damaging the die, the handles of the cores are provided with catches, and locking and other safety devices, thus rendering the die *fool proof*, as far as possible. These devices also make it impossible for a cast to be made before the cores are placed in position. Sometimes it is desirable to reinforce portions of the die-castings. This is accomplished by making provision in the die for the insertion of steel or brass bushings, plates or pins, which are embodied in each casting. The bushings inserted may be threaded or plain, as desired.

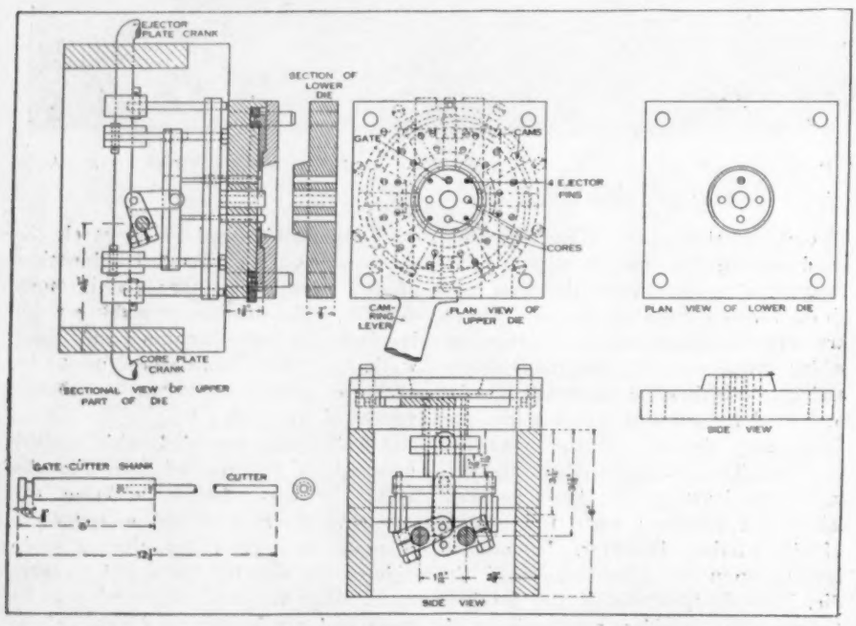


FIG. 3—PLAN AND SECTIONAL VIEWS OF DIE FOR CASTING WHEEL WITH MONTHS OF THE YEAR ON ITS CIRCUMFERENCE

Each die, of necessity, must be vented and this vent is so located that the resulting fins may be cut off without difficulty. In order that the castings may be ejected easily, the mold is provided with a taper or draft. This is very slight, and sometimes does not exceed 0.0005 inch per inch.

Collapsible Cores

Recesses and undercuts in castings frequently are made by collapsible cores. Thus, when the casting is ejected, a portion of the core of the die also is ejected; this part of the core then is removed from the casting and is returned to its place in the die. Exterior threads may be produced on castings without difficulty, but in order to cast interior threads, the die is not provided with the usual ejector pins; the casting instead, must be unscrewed from the die. When castings are to be provided with inscriptions, the Doehler company prefers to use raised numbers, letters and other characters, since these may be cut into the face of the die at a lower cost than depressed inscriptions.

As to accuracy, the Doehler company can work within limits of plus or minus 0.001 inch on dimensions below one inch; plus or minus 0.0015 inch on dimensions between one and two inches and plus or minus 0.002 inch on dimensions between two and three inches. Owing to the great variety of dimensions and construction, different parts are subject to different conditions and the company makes

FIG. 4—A REPRESENTATIVE ASSORTMENT OF DIE-CASTINGS, SOME OF WHICH HAVE BEEN ASSEMBLED

the question of accuracy a separate one for each individual case. As absolute accuracy in all dimensions is almost an impossibility, it is customary to devote the most attention to the portions of the die where accuracy is essential, while the other portions are held within reasonable limits.

Representative Dies

In Fig. 1 are shown three representative dies, opened to disclose the mold, while in the foreground are the three castings made in these dies. The cam-ring die in the center is used for solid rings with numbers on the circumference. Since it would be impossible to eject these castings in the usual manner, the number impressions are cut in the ends of steel pins which are moved to and from the center of the die by guides on the pins which are engaged by cams in the cam-ring. Thus, when a casting is to be made, the cam-ring is moved by a lever into the proper position for casting; after the metal has set, the lever is moved in the opposite direction, thus drawing the number pins away from the casting, which is thereupon ejected from the mold. The method of moving the cores by levers is shown by the construction of the dies at the right and left of the cam-ring die, Fig. 1. In the die at the right, the ejector pins are shown in the position they assume when ejecting a casting.

The die-casting machine employed at the Doehler plant is shown in Figs. 2 and 6. It consists of two parts, the lower section being a square cast iron frame supported on four legs and contains the metal reservoirs. The latter is heated by eight gas burners inside the frame, the supply of hot metal being replenished from time to time by ladling it from an auxiliary furnace which is located near the machine. In the basin is suspended a plunger pump, a bottom view of which is shown in Fig. 7. This is supported by a cast iron frame and is immersed in the hot metal. It consists of a cylindrical chamber having a plunger inserted at one end, the latter being forced in and out by a lever. In producing castings, the lever is first raised, thus pulling the plunger out far enough to open the slot at the bottom of the cylinder. The hot metal flows in by gravity and fills the chamber. The lever then is forcibly lowered, squeezing the metal out of the opening at the top of the plunger pump and up into the die. This method of forcing the metal into

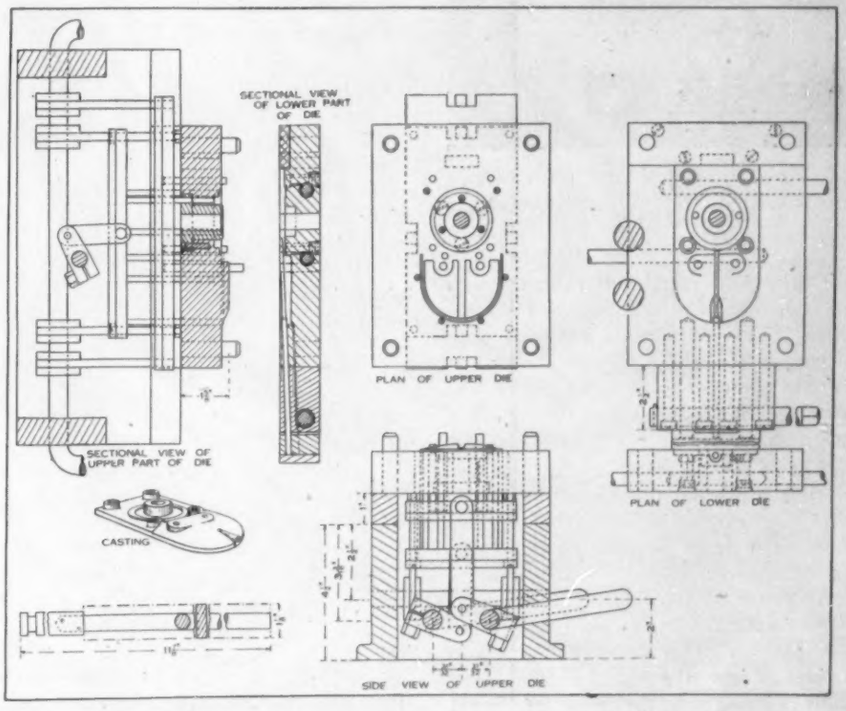

SECTIONAL VIEW OF LOWER PART OF DIE
PLAN OF UPPER DIE
SECTIONAL VIEW OF UPPER PART OF DIE
CASTING
PLAN OF LOWER DIE
SIDE VIEW OF UPPER DIE

FIG. 5—PLAN AND SECTIONAL VIEWS OF DIE FOR MAGNETO FRONT PLATES

the die has been found satisfactory in effecting the desired density of the metal in the castings.

The carriage of the die-casting machine is shown in a horizontal position in Fig. 2 and in the vertical position in Fig. 6. Fig. 2 is a view of the machine immediately after a cast has been made, and shows the die opened and the casting, a small gear wheel, about to be ejected from the mold. The method of opening the die by sliding its top section along two parallel rods is clearly shown in Fig. 2. The lower part of the die is permanently attached to the base of the carriage, which, in turn, is attached by a hinge to the frame of the machine. The gate is cut in the lower portion of the

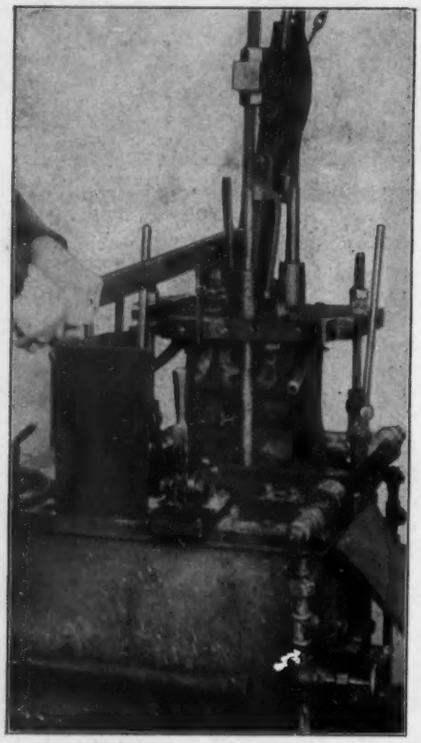


FIG. 6 — CARRIAGE OF DIE-CASTING MACHINE IN POSITION FOR A CAST

die, the hot metal entering through an opening in the base of the carriage. This opening is provided with a cupped socket into which the nozzle of the plunger pump fits when the carriage is brought to the vertical position.

Fig. 6 shows the carriage in the vertical position, the die being closed and the various levers set for casting. The lever in the hands of the operator is the one which controls the gate cutter. After the metal has been forced into the die by bringing down the plunger pump lever, the operator brings down the gate cutter lever, thus cutting off the flow of metal. Great skill is required in this part of the operation, as the density of the casting depends, in a large measure, on the judgment of the operator in closing the gate at the right time.

Operation of the Machine

Each casting machine is provided with a pneumatic hose connection in order that the face of the die may be cleaned with compressed air after each cast. Each machine is operated by three men; one operates the plunger pump and keeps the basin of the machine supplied with hot metal. The foreman directs the operation of the machine, opening and closing the dies, cutting off the hot metal flow, etc. The third man weighs and examines each casting, assists the foreman in operating the core levers, and cleans the plunger pump nozzle and the face of the die.

The inspection of castings at the plant of the Doehler Die Casting Co. is thorough and prevents the shipment of any defective pieces. That each piece may be weighed quickly and accurately, scales are located at the side of each machine; if the weight is correct, the casting is practically homogeneous, while if the weight is not up to the standard, the casting is rejected and thrown back into the melting pot. In the inspection department, the castings are measured, sounded and otherwise inspected. The Doehler company has posted a notice in the plant announcing that the passing of defective castings by any employe will be held as sufficient cause of immediate dismissal.

In most cases, the company can make a die from the drawings submitted by a customer. Frequently, however, the re-designing of the piece becomes a necessity. When it is found that the metal to be used is not sufficiently strong to withstand a given strain or that the margin of safety is too close, the design is changed by adding stock, webs, fillets, bosses, etc. The cost of the die is defrayed by the customer and becomes his property.

Metal Mixtures

The metals used by the Doehler company are alloyed in its foundry. The mixtures frequently consist of zinc, lead and tin with some copper, antimony, etc. The company carries a number of standard white metal alloys which may be used satisfactorily in a wide range of castings. As a number of factors, however, such as high co-efficient of expansion, low fusing points, the effect of steam, gasoline, alkaline or salt waters, corrosion, etc., must be considered, the company prefers to adjust the composition of the metal according to the working conditions to which the casting will be subjected.

The expense of making a die, as compared to the cost of patterns for casting in sand, prohibits the manufacture of parts used only in small quantities by the die-casting process. When a large number of duplicate parts is required, however, the cost of the die is more than absorbed by the cost of manufacture.

The chief advantage of the die-casting process is that it eliminates the machining and finishing of castings; at the same time it enables the manufacturer to eliminate irregularities and inaccuracies in machining, and the human element which tends towards imperfection. The manufacturer receives his parts finished and does not have to maintain machinery, jigs and tools required for machining sand castings. Frequently, an irregularly-shaped part, which has been dissected and sand-cast in several pieces to permit machining, may be redesigned and produced as a unit by the die-casting process. This method of making castings has been especially valuable in making possible the manufacture of articles which by former methods could not be made on a commercial basis because of the prohibitive cost involved. The die will last indefinitely, if kept properly lubricated and will produce many thousands of castings before it loses its usefulness. In Fig. 4 is shown an assortment of castings which are typical of the work produced by the die-casting process.

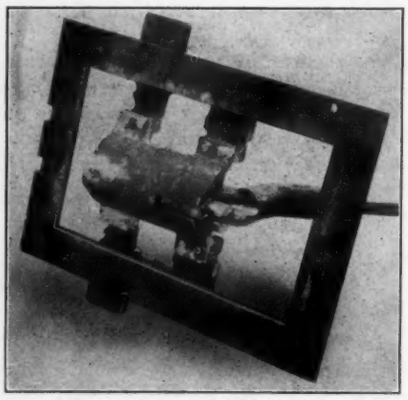


FIG. 7—PLUNGER PUMP OF DIE CASTING MACHINE

The Doehler Die Casting Co. has recently extended its process to the production of brass parts under pressure and the manufacture of aluminum die-castings. It also produces a full line of babbitt-lined bronze bearings.

Heavy Tools For Machining Turbine Sections

Details of the Construction of Large German Machine Tools Especially Designed for Turbine Work

By C. Van Langendonck

In the early days of turbine construction, the work of machining turbine parts offered no special difficulties, as these sections were of reasonable dimensions. At present, however, the dimensions of the turbine parts are so great that it has become necessary to build lathes of corresponding dimensions.

The Ernest Schiess Maschine Works, Dusseldorf, Germany, have followed very closely the new industry of machine tool production for turbine-building, and the accompanying illustrations show three of the heaviest tools supplied by this company to large turbine works.

Fig. 1 shows a horizontal boring and milling machine with one spindle, 9⅞ inches in diameter. The bed, 78⅝ inches wide and 67 feet 7 inches long, carries a heavy standard having a traverse of 56 feet. The standard carries the counterbalanced boring saddle. The drive is from a direct current motor with a sliding clutch placed at the foot of the standard. The motor operates at about 750 revolutions and actuates the large geared face-plate through suitable gearing actuated by a vertical driving shaft.

The speed change in the gear box is so arranged that the simultaneous engagement of several speeds is impossible, thereby preventing the breakage of the gears. The boring spindle has a diameter of 9⅜ inches. It is bushed in an adjustable guide and is arranged for running in both directions. The number of revolutions can be varied from one to 100 per minute. The machine is designed for boring with a self-acting spindle adjustment, as well as for milling both horizontally and vertically.

The feeds for these three operations are obtained through a range of stepped wheels and can be varied several times for boring within the limits of 1/200 to ⅛ inch with eight variations, and for milling within the limits of 1/40 to 4/5 inches per revolution of spindle, also with eight variations. The feeds can be reversed by reversing the bevel

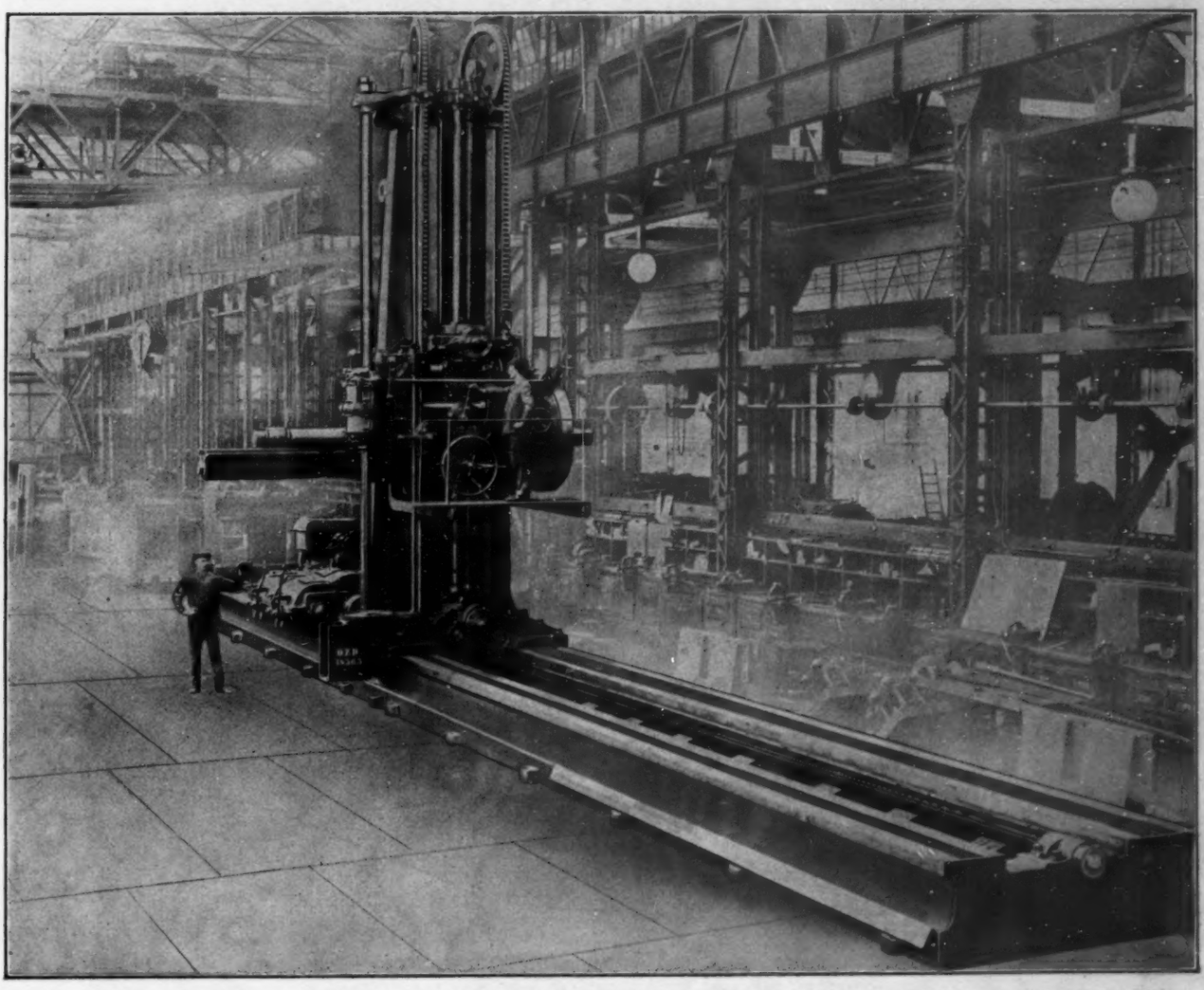


FIG. 1—LARGE HORIZONTAL BORING AND MILLING MACHINE; THE BED IS 67 FEET, 7 INCHES x 6 FEET, 6½ INCHES

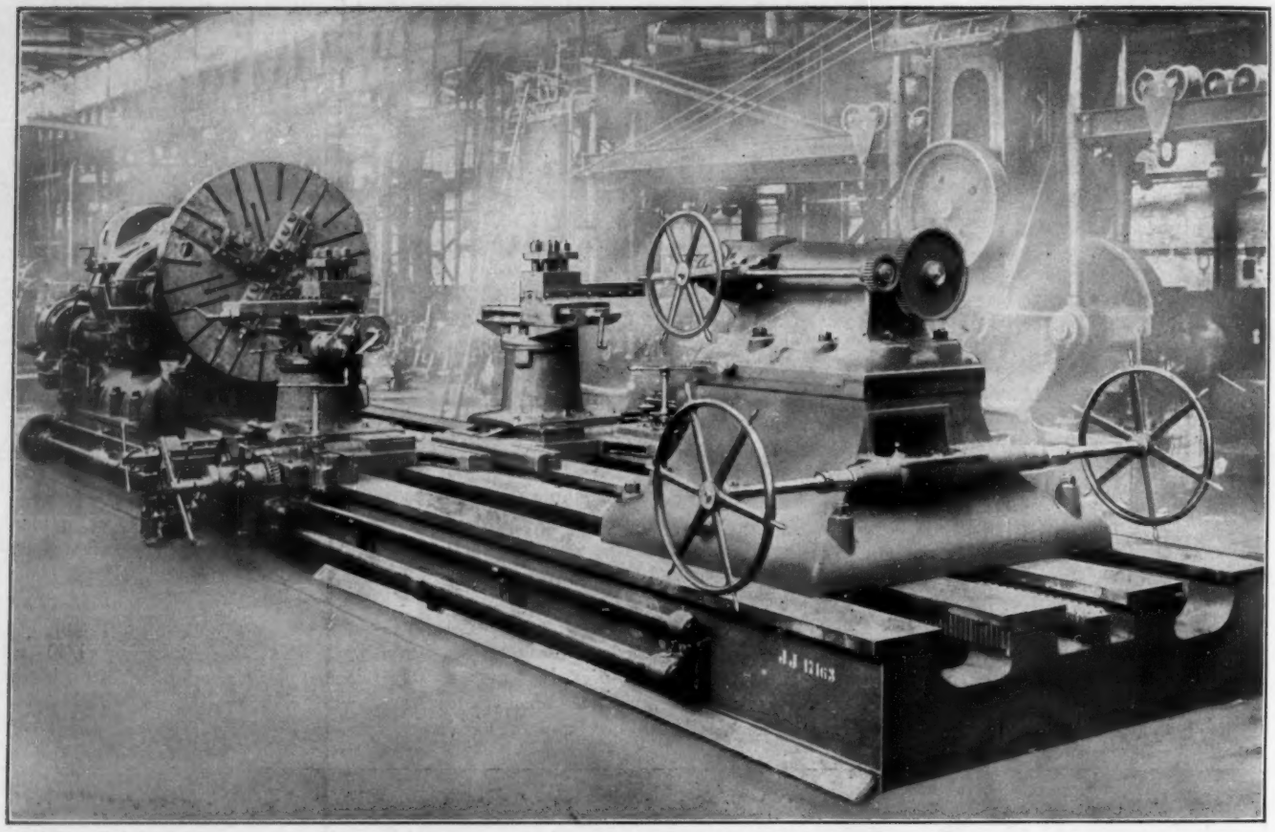


FIG. 2—LARGE LATHE FOR MACHINING TURBINE PARTS

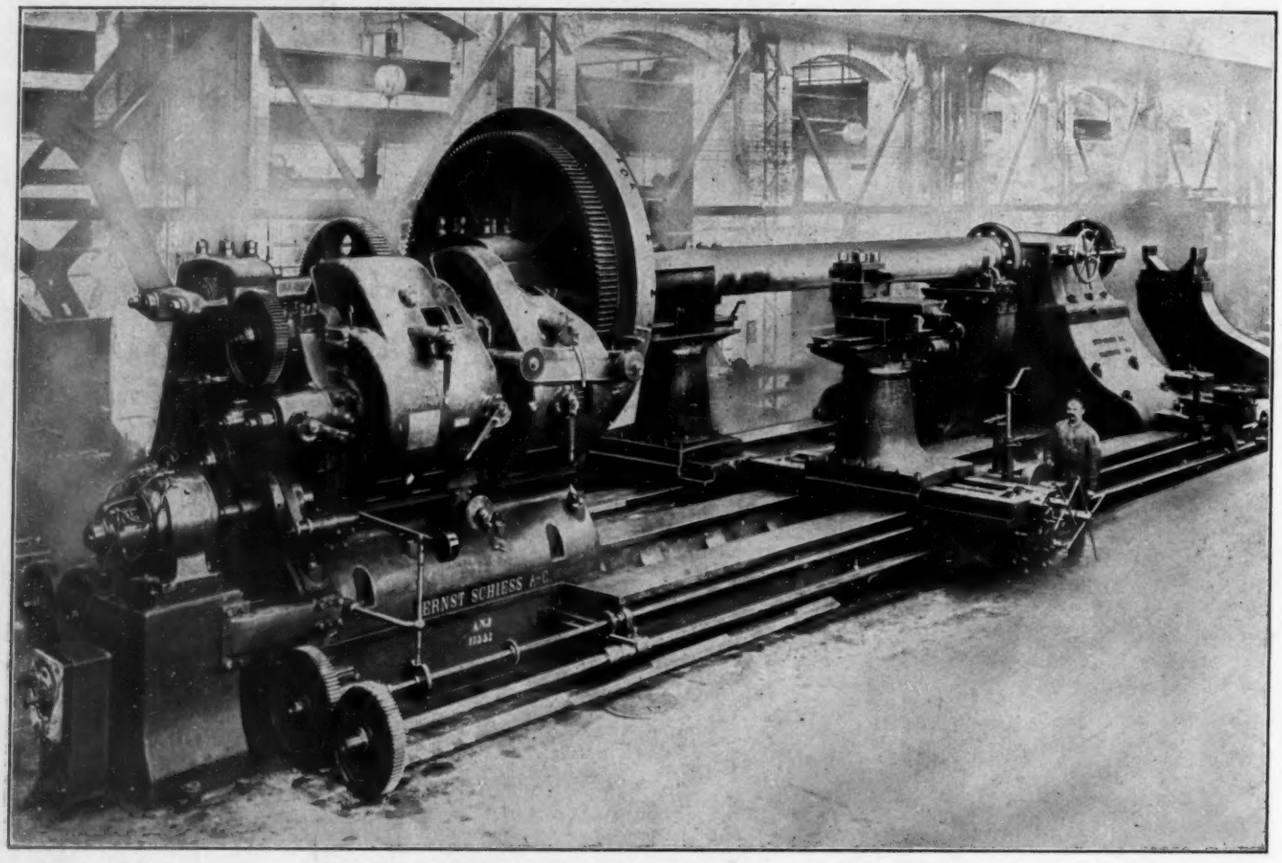


FIG. 3—TURBINE SHAFT TURNING LATHE; WEIGHT, 190 TONS

gearing, and rapid power motion is provided for the standard and also for the saddle. The spindle feed is through a screw spindle of coarse thread, so that a quick hand adjustment is possible. All operations, such as actuating the levers, disengaging the feed and quick adjustment, as well as starting, stopping and regulating the motor are effected from the platform on the saddle, and only the changing of some gears at the foot of the standard must be attended from the floor. The steel screw spindle for the traverse of the standard is placed in the bed and has a diameter of 5½ inches. The bed is so arranged that it can be coupled to a base plate for carrying the work.

All gears are steel, either cast or forged, and long bronze bushes are provided. Exposed gears are protected with cast iron guards. Lubricating tubes with end caps are provided. The lathe has an approximate weight of 90 tons.

Fig. 2 shows a lathe for turbine work and for turning shafting. Its main dimensions are as follows: Height of centers, 5 feet 5 inches; distance between centers, 29 feet 6 inches; length of bed, 48 feet 6 inches; width of bed, 10 feet 2 inches, and extreme diameter of face plate, 10 feet 10 inches. The machine is designed for operation with high-speed tool steel. The face plate is equipped with four cast iron jaws with steel grips. The main working shaft is carried in cylindrical brass bearings, and is driven by a 35-horsepower electric motor, running at a speed of 650 revolutions per minute. The motor has a uniform speed, but a series of 20 different speeds can be obtained for the lathe by means of a corresponding series of gears. The motor is connected to the lathe by a sliding coupling, the object of which is to prevent the fracture of gears or other parts of the machine in case of overloads or accidents. The bed is made double, and carries two tool supports, front and back. Both travel automatically and independently of each other; they also can be adjusted by hand longitudinally on a rack, and traversely by means of a screw spindle.

The tailstock is easily shifted on the bed by hand. The adjustment of the center is effected by a hand wheel in front of the tailstock, thus enabling the operator to easily watch the process of adjustment.

All gears, pinions, handles and levers for varying the feed variations within the limits of 0.008 to 0.196 inches longitudinally per revolution of the face plate, are mounted in the tool supports. The gears, pinions and racks are of steel, with machine-cut teeth. The front tool support is provided with the necessary gear for screw-cutting over a length of 31½ inches. The approximate weight of the lathe is 95 tons.

Fig. 3 shows a turbine shaft turning lathe. Its dimensions are as follows: Height of centers above bed, 7 feet 11 inches, and 6 feet 11 inches height of centers over carriage; distance between centers, 46 feet 2 inches, with a total length of bed of 67 feet 3 inches. The maximum swing over the carriage is 13 feet 9 inches.

The Face Plate

The face plate has a diameter of 11 feet 2 inches and is provided with four cast iron jaw cases, equipped with steel jaws. The main spindle runs in cylindrical bronze bearings and is driven by a 50-horsepower motor, at a constant speed of 550 revolutions. By the means of different gear changes, 20 different speeds within the limits of 0.2 to 50 per minute can be obtained. On the motor a sliding clutch is provided to prevent the damage to gears should the machine be overloaded.

The double bed is 15 feet 1 inch wide and 28 inches high. The feed of one rest is independent of the feed of the other rest, and is effected automatically and also by hand.

The diameter of the tailstock spindle is 9½ inches. The diameter of the main spindle in the front bearing is 18 inches. All gears, handles and levers for changing the feed are arranged on the rests. The front rest is arranged for thread cutting. For this purpose the swivel has a lead screw of ½ inch pitch, and threads up to 3 feet 3 inches in length can be cut. The lathe weighs 190 tons.

Guard for Straightening Rolls

A screen or guard for straightening rolls has recently been designed by the warehouse department of the Illinois Steel Co., Chicago. The plates are pushed through the rolls by a workman and the guard prevents his fingers or hands from being caught and crushed. It consists of a heavy screen bound around the edges by light strip steel.

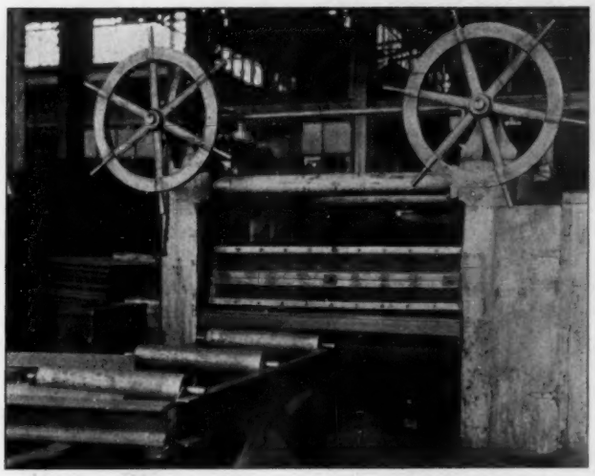


FIG. 1—GUARD LOWERED IN NORMAL POSITION

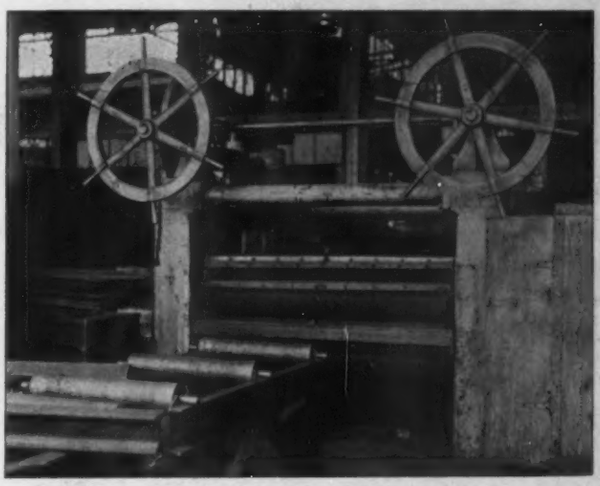


FIG. 2—GUARD RAISED TO ADMIT AN IRREGULAR PLATE

It is built in two sections, hinged at the middle, and is shown in its normal position in Fig. 1. Fig. 2 shows the lower section raised to permit a crooked or irregular plate to enter the rolls. The entire guard is attached to the bearings of the top roll, and, therefore, it is always at the same distance from the top of the plate regardless of the thickness of the latter.

"Resuscitation" is the subject of a booklet issued by the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., which contains a reprint of a paper on this subject delivered by Dr. Charles A. Lauffer, medical director of this company, before the Philadelphia section of the National Electric Light Association. The prone pressure or Schafer method of resuscitation, which has been adopted by a number of engineering societies, is described in detail.

The Determination of Oxygen in Iron and Steel[1]

A Discussion of the Ledebur Method and Methods of Sampling—Oxygen and Its Relation to Corrosion

By Wm R Fleming[2]

It is a lamentable fact that we have no trustworthy method for the determination of oxygen in iron and steel. At the present time the Ledebur method is the only one used by chemists to any extent. In the writer's opinion, this method is little better than no method at all, for it is both inaccurate and misleading. In the cases of steel and wrought iron the method is practically worthless, for most of the oxygen in steel is in combination with manganese, silicon, chromium, aluminum, etc., and much of the oxygen in wrought iron is in the silicates and phosphates of the cinder. It is well known that oxygen united with these elements is not obtained by the Ledebur method. Yet in spite of this some chemists waste their valuable time attempting to determine oxygen by the Ledebur method.

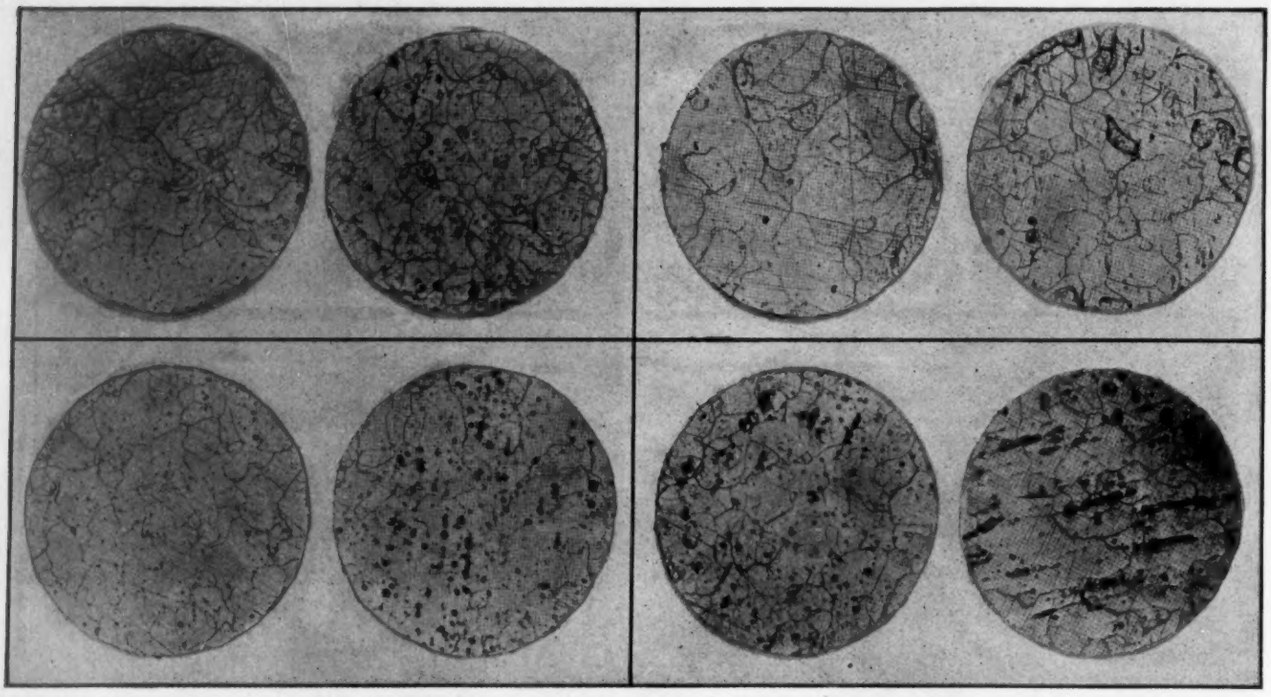


FIG. 1—BAR NO. 1
FIG. 3—BAR NO. 3

FIG. 2—BAR NO. 2
FIG. 4—BAR NO. 4

Ferrous Metal

Several companies are now manufacturing ferrous metals in open-hearth furnaces that approach closely to pure iron. These metals are practically free from manganese, silicon and other elements whose oxides will not decompose in hydrogen. Consequently, the oxygen in these metals is practically all in combination with iron, and since all oxides of iron give up their oxygen when ignited in hydrogen, it follows that here the Ledebur method must have some value. Although in this special class of ferrous metals the Ledebur method gives results nearest to the truth, at the same time I wish to show in this paper that even here the method has a very limited value.

A method outlined by Walker and Patrick at the last Congress of Applied Chemistry may eventually prove a reliable means of determining oxygen in steel. By this method the total oxygen in the steel is obtained as carbon monoxide by heating to a high temperature, in the presence of carbon, in a vacuum. The great objection to this method is the extremely large blank that has to be deducted. However, the method is undoubtedly far superior to the Ledebur method and it is to be hoped that the originators will bring it to a degree of accuracy which will enable us to class it with the exact methods we have for carbon, manganese, etc. In republishing the Ledebur method a few years ago, Dr. A. S. Cushman deprecated the fact that American chemists had failed to give sufficient attention to the determination of oxygen in steel, and that text books on steel analysis had failed to include a method for it. This attitude of American chemists is not surprising, for they undoubtedly realized that there was no method sufficiently accurate to justify a description in text books, not even to justify the wasting of valuable time in the laboratory. The fact that the Ledebur method is not described in any work on analytical chemistry, except that of Ledebur himself, surely has some significance, especially when we consider that Ledebur published the method over 30 years ago.

Dioxidizing Agents

For the purpose of this paper I will take for granted that when analyzing ferrous metals free from difficultly-decomposed oxides, the Ledebur method obtains all of the oxygen, provided the sample is sufficiently divided. However, in some instances, considerable aluminum

[1]Presented at the Atlantic City meeting of the American Society for Testing Materials.
[2]Chief Chemist, Newport Rolling Mill Co., Newport, Ky.

is used as a deoxidizing agent in place of ferro-manganese, and in these cases there is undoubtedly some aluminum oxide in the metal, which, of course, would be untouched by ignition in hydrogen.

Taking the Sample

It is a surprising fact that all writers who have described methods for the determination of oxygen have failed to discuss the most important feature, namely, the taking of the sample. It is absurd to waste time determining an element unless we know that the drillings we are analyzing are representative of the entire mass. We have little trouble securing representative samples of drillings for the determination of carbon, manganese, etc., and most chemists seem to take for granted that representative samples for oxygen can be secured in the same way. This is not true. The carbides, sulphides and phosphides of iron and manganese exist in a state of solution and are fairly uniform in well-made steel. The oxides of iron do not exist in this intimate relation with the metallic body; they are mere mechanical impurities and arrange themselves throughout the metal according to mechanical laws. During slow cooling of liquid metal in ingot molds, the oxides travel slowly inward and upward, leaving the solidified ingot irregular in oxygen. On this account it is difficult, if not almost impossible, to get drillings for analysis which will represent the true oxygen content of the entire mass. Certainly one or two pieces taken at random from a shipment will give the purchaser no idea of the true percentage of oxygen.

I have examined a large number of ingots of nearly pure ferrous metal and in every case I have found the oxygen irregularly distributed, the outside invariably being lower in oxygen than the center, and the lower portions of the ingots invariably containing less than the upper portions. It did not matter whether the metal contained little or much oxygen; the variation existed just the same.

Percentage of Oxygen in Samples

Ingots weighing over 5,000 pounds were rolled into sheet bars, 1 inch thick and 8 inches wide. After cutting off a good crop at the upper end, sample No. 1 was cut, then samples cut at eight equal distances from top to bottom. Two oxygen determinations were made on each sample by the Ledebur method, one from the drillings cut from the first ⅛ inch below the surface, and one from drillings cut from the center. The results from an ingot containing considerable oxygen are given in the accompanying table.

Percentage of Oxygen.

Bar No.	First eighth inch in bar, outside.	Fourth eighth inch in bar, center.
1 (near top).....	0.047	0.098
2	0.032	0.107
3	0.052	0.088
4	0.055	0.096
5	0.023	0.074
6	0.047	0.090
7	0.022	0.041
8 (near bottom)...	0.036	0.062

Figs. 1 to 8 show microphotographs of sections corresponding to the locations from which the drillings were taken. The oxygen percentages in the accompanying table, together with the microphotographs, shows the great difficulty in obtaining representative drillings for oxygen determination.

Importance of Location of Sample

I am convinced that the analyses of one or two pieces cannot be of any value. Furthermore, I am convinced that unless the analyst knows the location of the piece, whether it came from the top, middle, or bottom of the ingot —in other words, unless he knows the history of the sample—the result he obtains will be of little real value. From this it follows that the manufacturer is the only one that can get a true (approximately true) idea of the amount of oxygen contained in all the pieces rolled from an ingot, or from a whole heat.

Great importance is being attached by some companies to the amount of oxygen contained in sheet metal, it being claimed that this element is an accelerator of corrosion. In support of this view meaningless laboratory tests and vague theories are advanced. As a matter of fact, there is absolutely no evidence which even indicates that oxygen is an accelerator of corrosion. On the contrary, we have an abundance of testimony pointing in the opposite direction. We know that wrought iron resists corrosion much better than steel and we know that most wrought iron is polluted with oxygen. We know that the *piles* are made of muck bars covered with

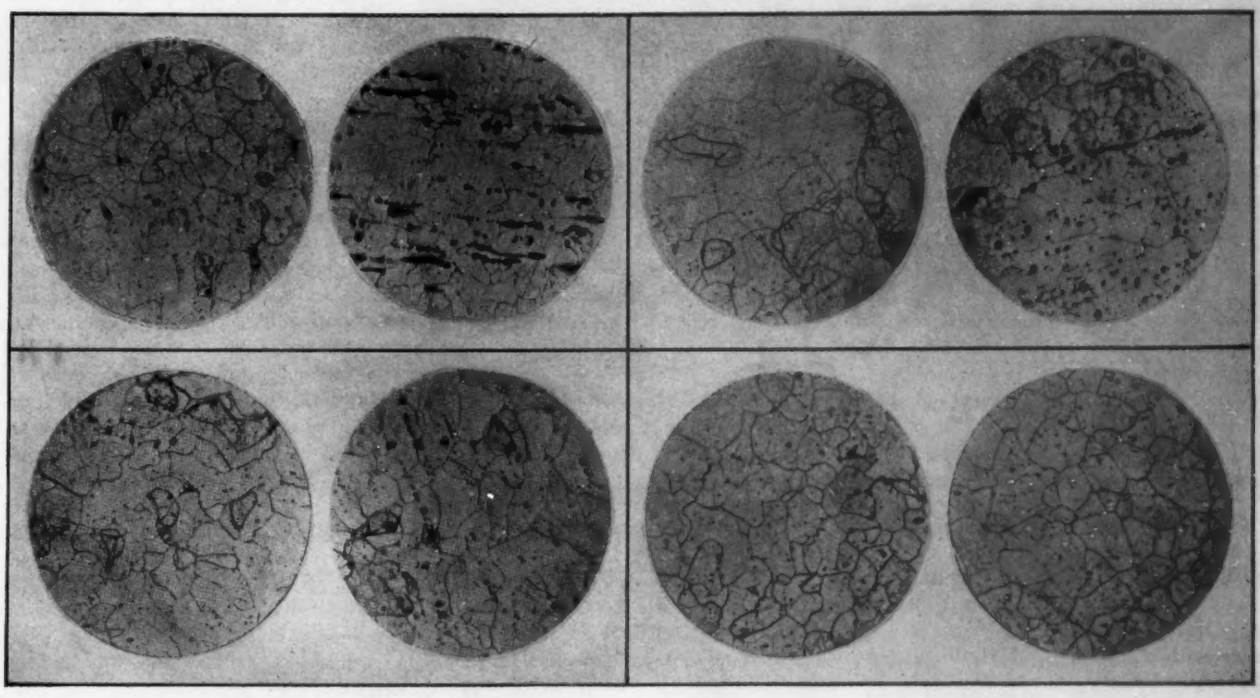


FIG. 5—BAR NO. 5
FIG. 7—BAR NO. 7
FIG. 6—BAR NO. 6
FIG. 8—BAR NO. 8

thick coatings of iron oxide and we know that this iron oxide is present in the finished sheet. The very method of manufacture itself produces metal high in oxygen. This evidence, produced by years of practical experience, is infinitely more convincing than the most ingenious laboratory test or the most subtle theory.

While I do not defend wrought iron and while I believe that metal can be made in the open-hearth furnace which will be even more rust-resisting than wrought iron, at the same time I believe we are unfair when we compare percentages of oxygen in the two metals and use the high percentage in wrought iron to lead prospective buyers away from it. It is my opinion that, if the truth were known, oxygen retards rather than accelerates corrosion.

Remarks on Ledebur Method

Dr. A. S. Cushman published the Ledebur method in the *Journal of Industrial and Chemical Engineering*, Vol. 3, p. 372. He used a gas blast furnace which simultaneously heated the preheating and ignition tubes. While there is no objection to this if the hydrogen is perfectly free from oxygen, there is a decided objection to it if the hydrogen contains oxygen. In this case all of the oxygen that is in the apparatus, at the time a certain temperature is reached, between the preheating tube and the weighing apparatus, is weighed and counted as oxygen in the steel. It is true that the running of a blank may correct this error to some extent, but there is no way of knowing the exact error that is introduced in this way with every determination. The best, and by far the safest, arrangement is to employ a preheating furnace, and the furnace best for this purpose is an electric resistance furnace.

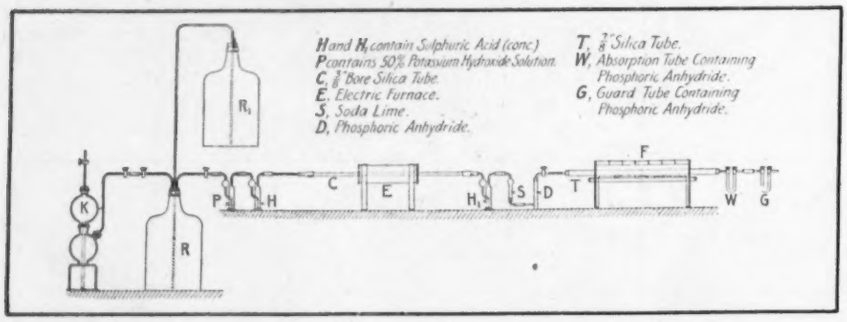


FIG. 9—APPARATUS USED FOR OXYGEN DETERMINATION

The train used by the writer is shown in Fig. 9. The hydrogen is generated by stick zinc and dilute hydrochloric acid. By placing 15 pounds of stick zinc in the generator it need not be disturbed for over 100 determinations. The great advantage of this is apparent; R and R_1 provide constant pressure and improve the apparatus 100 per cent over that with a Kipp alone.

The weighing apparatus is weighed filled with hydrogen. Aspirating with air before weighing is not only a waste of time, but introduces more error than it corrects. If the weighing tube has perfectly ground stoppers it should be weighed filled with hydrogen; if not, it is best to weigh it filled with air. To test the tube, fill it with hydrogen and weigh against a tare. Weigh again at equal intervals for several hours. If it gains in weight it should be used for some other purpose. In ordering these tubes perfectly ground joints should be insisted upon.

If the apparatus is in good order constant blanks of 0.0015 gram will be obtained, whether the atmosphere be hot or cold, moist or dry.

R. H. McMillen has recently published the Ledebur method, claiming the following features as improvements: Use of electric resistance furnace for ignition of the sample; use of porcelain boats; use of pyrogallic acid in the train; weighing of the absorption tube filled with hydrogen. Dr. Cushman criticized the article on the ground that no contribution had been made to the older method. The stand taken by Cushman is undoubtedly taken by all chemists who have had experience with the Ledebur method, for it is difficult to see wherein McMillen has made the slightest improvement in the method. As Cushman has said, the electric furnace is not adapted to this method because it requires too much time heating and cooling. The first train set up by the writer, over five years ago, contained the two improvements claimed by McMillen, namely, two resistance furnaces and pyrogallic acid. The second electric furnace, for heating the sample, was abandoned a few days later for reasons pointed out by Cushman. A short time afterward I learned that the use of pyro was unnecessary and abandoned that also.

As to the other improvements claimed by McMillen, the use of porcelain boats and weighing of the tube filled with hydrogen, little need be said. Any chemist, in his first experiments with the method, would naturally use porcelain boats. Cushman criticizes the use of porcelain on the ground that it absorbs moisture. This criticism is slightly overdrawn, for, as McMillen has said, with little precaution no error will be introduced in this way. The most important criticism made by Cushman was on the practice of weighing the absorption tube filled with hydrogen. He attacks this practice on the ground that hydrogen diffuses through *air-tight* stoppers. On this point I beg to disagree with Dr. Cushman. I have been weighing absorption tubes filled with hydrogen for over five years and wish to say emphatically that hydrogen does not diffuse through the stoppers if they are ground as they should be. If the chemist will take the time to test the U-tubes to satisfy himself that the stoppers are well-ground he need have no fear of hydrogen diffusing through the stoppers.

Manganese and Oxygen

In his article McMillen called attention to the well-known fact that the Ledebur method obtains only that oxygen which is combined with iron, and that it fails to decompose the oxides of manganese, silicon, etc. Replying to this, Dr. Cushman states that it is not necessary to know the amount of oxygen combined with manganese, silicon, etc., because the amount of iron oxide measures the extent to which the metal has been over-oxidized in the furnace. It is difficult for the writer to understand the point of view taken by Dr. Cushman. Practically all basic steel, at the time of tapping, contains from 0.15 to 0.25 per cent of manganese. Is it Dr. Cushman's opinion that none of this manganese is combined with oxygen? From our practical knowledge of the affinity of iron and manganese for oxygen we must assume that the small amount of oxygen usually found in steel at the time of tapping is in combination with manganese, or at least we must assume that manganese has its share of the oxygen. For the sake of argument we will assume that all of the oxygen in the metal at the time of tapping is in combination with iron, and that the metal contains 0.10 per cent of oxygen. To deoxidize this highly over-oxidized metal, ferro-manganese and ferro-silicon are added in the ladle. If enough of these deoxidizing materials has been added, and if they accomplish the purpose for which they were added, then the metal will be free from iron oxide and will contain a certain amount of manganese and silicon oxides which could not find their way to the slag. In this ideal case would not the amount of manganese oxide and silica bear some relation to the amount

of oxidation that had taken place in the furnace?

In the manufacture of pure open-hearth iron the metal, at a certain stage in the process, contains from 0.06 to 0.10 per cent of oxygen. If tapped at this stage, without the addition of any deoxidizing agent, no difficulty will be experienced in rolling it. If, however, ferro-manganese and ferro-silicon are added (say 200 pounds of each) in the ladle, the metal will crumble to pieces in the rolls. This is due to the fact that the manganese and silicon rob the iron of its oxygen and in some mysterious way render the metal extremely red-short. If these oxides had found their way to the slag, the metal, in all probability, would have been improved. This is mentioned to show that the oxides of manganese and silicon, formed on the addition of ferro-manganese and ferro-silicon to over-oxidized metal, do not find their way to the slag, but remain, to a great extent, in the metal.

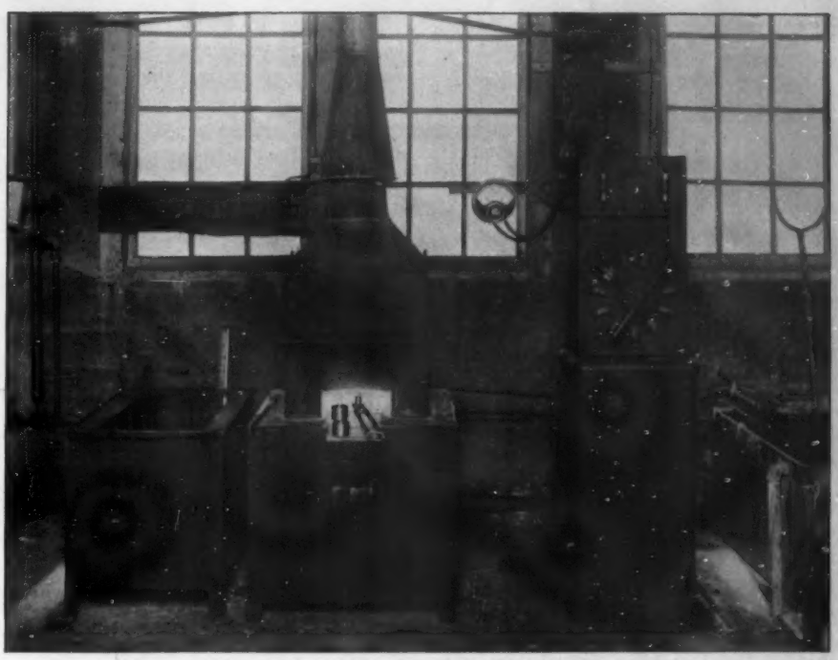


FIG. 2—ELECTRIC HARDENING FURNACE, 12½ KILOWATTS, FOR HARDENING CARBON STEEL

Electric Furnace for Hardening Tools

For hardening tools and dies an electric furnace has been developed by the General Electric Co., Schenectady, N. Y., a number of which are being used successfully in this company's plants. The crucible or container for the bath is lined with large fire brick slabs, cemented together to prevent any possibility of leakage. Two views of these electric furnaces are shown in Figs. 1 and 2; Fig. 3 is a sectional elevation and Fig. 4, a sectional plan. The dimensions of the crucible are 8 x 8 inches and 12 inches deep, although the bath is only 8 inches deep. The lining is surrounded by heat insulating material, the entire crucible being contained in a substantial sheet iron case. The two iron electrodes located on opposite sides of the crucible are of sufficient area to insure the flow of the current through practically every part of the bath.

A regulating transformer is provided for varying the potential impressed on the bath and consequently the temperature of the bath. The secondary coils of this transformer are direct-connected to the furnace electrodes while the primary coils are subdivided into a number of sections, taps from the latter leading to a dial switch having 11 points and a reverser. By turning the dial through two revolutions a total of 21 adjustments can be made. A line panel provided with a meter, line switch and fuses is furnished with each transformer. The dial switch and line panel are installed in a metal framework mounted on top of the transformer case. The hood on top of the furnace contains a warming oven.

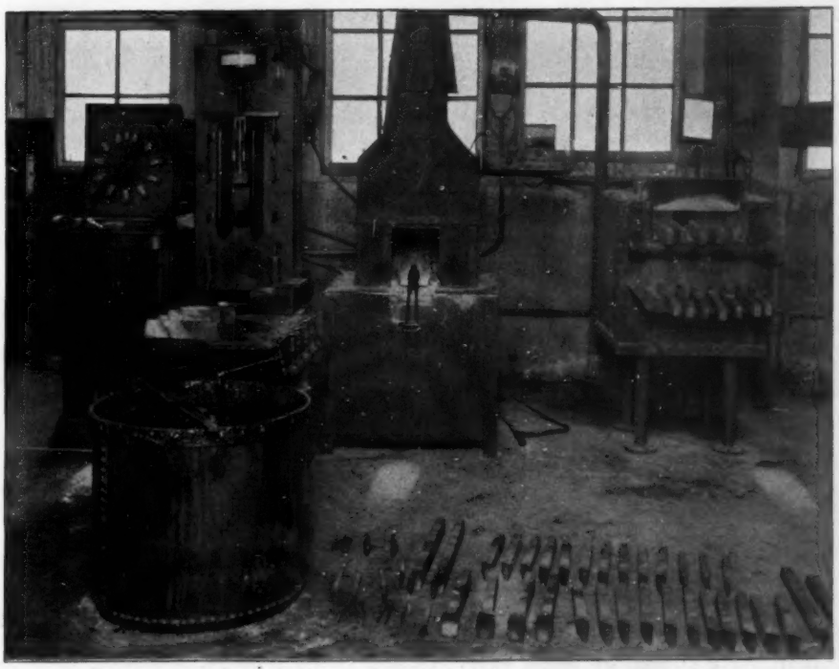


FIG. 1—TWENTY-FIVE-KILOWATT ELECTRIC FURNACE WITH PREHEATER AT THE RIGHT

The type of the bath used depends upon the temperature at which it is to be operated. For hardening carbon steel, where the temperature required varies from 750 to 1,000 degrees Cent., a mixture of barium chloride and potassium chloride is used, the proportions varying with the temperature, the higher the temperature, the greater the proportion of barium chloride. For hardening tool steel equal parts by weight of the salts are recommended. For hardening high speed steel, where temperatures up to 1,300 degrees Cent. are required, barium chloride only should be used.

As the salts used for the bath are non-conductors of current when cold, it is necessary to start the melting of the bath by an auxiliary electrode provided for that purpose. Unless started with fresh salts, a channel about 2 inches square should be cut into the solidified bath extending from one electrode to the other, the chips remaining in the channel. The electrodes should be cleaned for contact at the ends of the channel and two or three pieces of any standard lamp carbon, approximately 7 inches long, should be laid on top

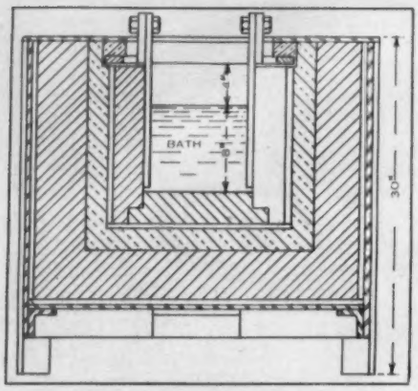


FIG. 3 — SECTIONAL ELEVATION OF FURNACE

of the chipped portion. With the dial switch about one turn from either limit, the line switch should be closed, and by means of the auxiliary electrode the carbon should be pressed against one electrode. The current flowing through the carbons, which generate heat, cause the surrounding salt to melt so that the auxiliary electrode may be drawn slowly to one side, leaving a channel of liquid salt between the main electrodes. The auxiliary electrodes then can be removed, the molten channel together with the carbons being sufficient to maintain the circuit. About 10 minutes are required to establish the molten channel between the two electrodes and the entire bath reaches its working temperature in about 1½ hours. The temperature of the bath can be determined accurately by a pyrometer, the thermocouple generally being enclosed in a steel tube so as to insure maximum life. When the tool is placed in the bath a crust of solidified salt forms on it, which, being a poor conductor of heat, prevents too sudden heating. Preheating is advantageous, especially in the case of large tools, as it, in a measure, prevents distortion. When the tool has attained the temperature of the bath, it is removed, a thin film of the salt adhering to it and preventing oxidation. This adhering salt chips off when the tool strikes the cooling medium, leaving a clean surface.

The equipment shown in Fig. 1 is installed in the blacksmith shop of the Schenectady, N. Y. works of the General Electric Co., and is used for hardening high speed steel, approximately 65,000 tools being handled in a year.

The Preheater

The tools first are placed in the preheater shown at the right. This preheater is oil-fired, the air blast having a pressure of eight ounces. The shelf on the front of the preheater is used as a receptacle for the tools being hardened. The tools are placed in the furnace so that their cutting ends project over the burners. When heated red hot the tools are removed and are placed in the electric furnace and at the same time the attendant presses the button of the clock device at the right of the furnace, turning on the lamp. At the end of the period for which the timing device is set the lamp goes out, notifying the attendant that the time has arrived for removing the tools. The tools are quenched in the oil bath shown at the left, which is agitated by air to keep it cool. An electric furnace for hardening carbon steel tools is shown in Fig 2.

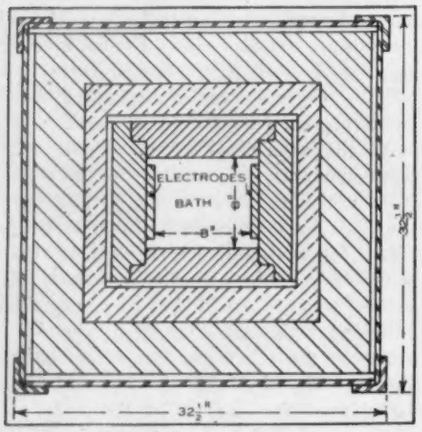
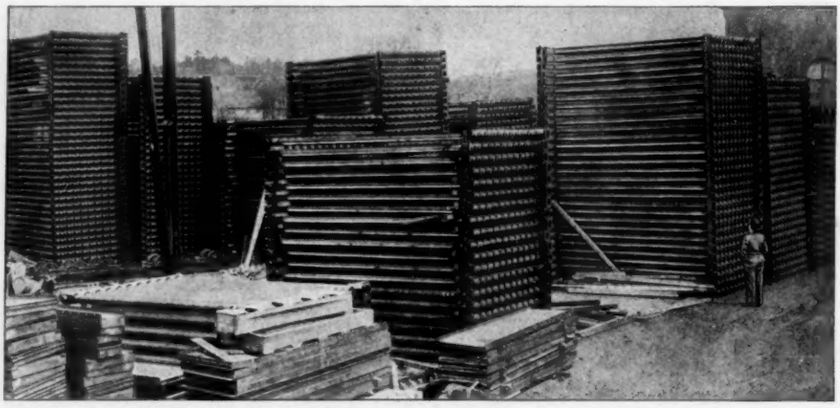


FIG. 4—SECTIONAL PLAN OF FURNACE

A Large Economizer Shipment

In the accompanying illustration is shown a number of fuel economizer sections at the plant of the B. F. Sturtevant Co., Hyde Park, Mass., ready for shipment to the power plant of the Commonwealth Edison Co., Chicago. These economizers will be used in connection with four boilers, one economizer being installed for each boiler. Each machine consists of 528 pipes arranged in three groups. Induced draft will be provided by four Sturtevant multivane exhausters equipped with water-cooled bearings and driven by direct-connected, 75 horsepower induction motors. The fans discharge into a stack 19 feet in diameter and 259½ feet high above the boiler room floor. Each boiler contains 12,260 square feet of water heating surface and 3,000 square feet of superheating surface. The boilers are equipped with two chain grate stokers containing 130 square feet of surface each. Each boiler is capable of evaporating a maximum of 80,000 pounds of water per hour with feed water at 250 degrees Fahr., into steam of 210 pounds pressure, 225 degrees superheat. About 13,000 pounds of slack coal will be burned per hour.



ECONOMIZER SECTIONS READY FOR SHIPMENT FROM THE PLANT OF THE B. F. STURTEVANT CO.

The B. F. Sturtevant Co. recently has built economizers for the Cleveland Illuminating Co., Cleveland, the Southern California Edison Co., the Delaware & Hudson Railway Co. and the Rochester Electric Light & Railway Co., aggregating 31,200 horsepower.

Book Review

Heaton's Annual, 1913 edition; published by Heaton's Agency, Toronto, and furnished by THE IRON TRADE REVIEW for $1 net.

The 1913 edition of this directory is replete with valuable information regarding commercial Canada and contains complete data covering the Canadian customs law, descriptions and locations of industrial communities, list of stock companies doing business in Canada, etc.

Fluorspar was produced in 1912 in five states, Illinois, Kentucky, Colorado, New Hampshire, and New Mexico, in the order named. Newly discovered fluorspar veins are reported near Duffields, Jefferson, Morrison, and Wagon Wheel Gap, Colo., and a small quantity was produced at the first three of these localities.

From Cologne to Munich With American Engineers

German Hospitality is Reflected by the Large Number of Entertainments—Visits to Manufacturing Plants and Papers Read

Special Staff Correspondence

Munich, July 8.—Tired from their long jaunt of sightseeing, but determined to keep up with the program, the delegates from the American Society of Mechanical Engineers started out from Cologne, Wednesday morning, July 2, to visit the Gasmotorenfabrik Deutz, located at Deutz, across the river from Munich, and the Humboldt Maschinenbau Gesellschaft in the suburb Kalk.

The former makes a specialty of gas and gasoline engines, both in small and large sizes, as well as gasoline locomotives and haulage machines. For use on navigable waterways, it has equipped tow-boats of barges with gasoline engines as large as 500 horsepower, while for pleasure boats, fishing boats and other small commercial craft its engines are in common use. A feature of the company's plant which strongly impressed the visitors is the fact that it is so laid out that every foot of working space can be utilized without hindrance or confusion, and a large number of operations were proceeding simultaneously within a limited area. The plant being of considerable extent, this means a correspondingly heavy production. Here the delegates also saw motors constructed for areoplane and airship propulsion.

The Humboldt works, inspected at Kalk, were found to specialize in machinery for ore reduction, including magnetic separating plants, which have been successfully used in all parts of the world. Another plant at Kalk of world-wide fame, is that of the J. Pohlig Aktien Gesellschaft, visited by some members of the party. This company constructs aerial tramways and other systems of handling material in heavy lifts or over considerable distances.

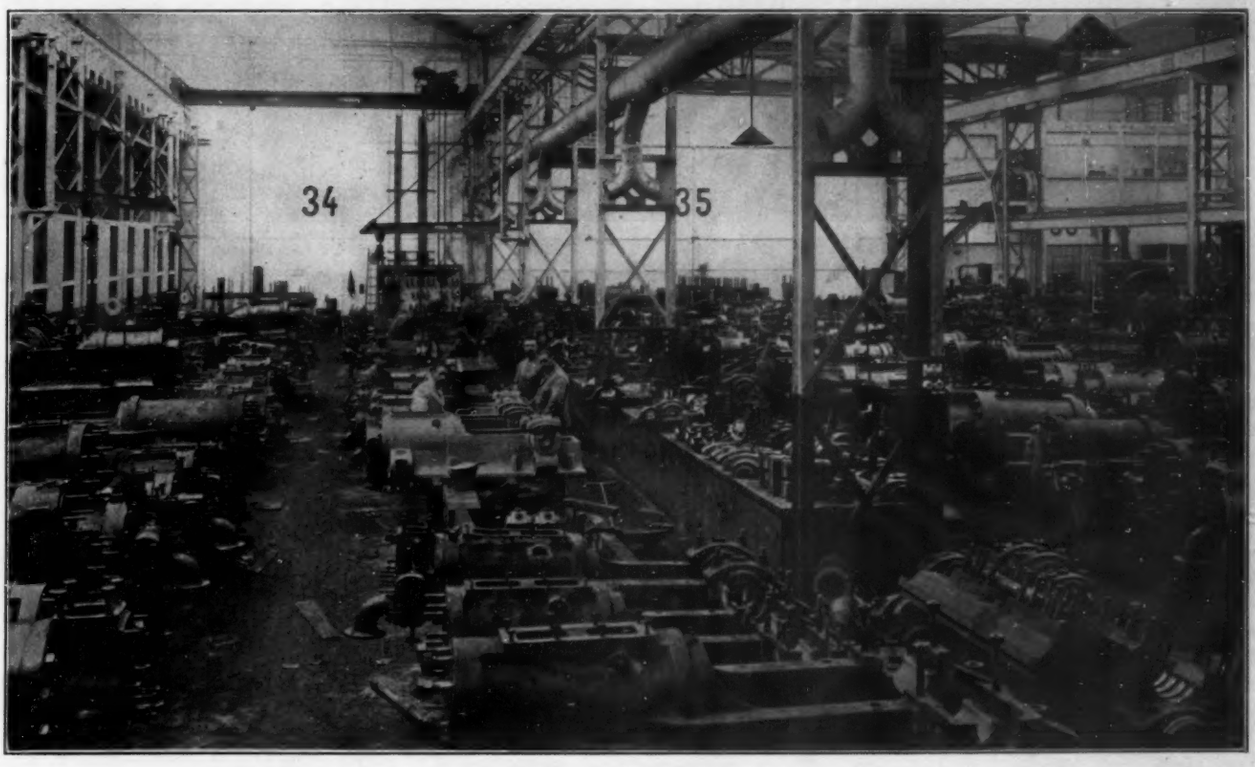
Trip on the Rhine

The evening was occupied with a reception in Gurzenich, tendered by the city officials of Cologne. In the morning the entire party left by rail for Coblenz and thence took a trip on the Rhine to beautiful Rudesheim, where a "festival" had been arranged. Evening found the visitors at Frankfort-on-the-Main, where they were greeted with another reception tendered in the Palm Garden by the Frankfort section of the Verein Deutscher Ingenieure.

The following day, July 4, was spent in viewing the public utility plants in Frankfort and in visits to some of the local works. These included the plant of Pokorny & Wittekind, builders of gas engines, turbo-blowers and compressors and other heavy machinery; Voight & Haeffner, control apparatus; Wolf, Jahn & Co., machine tools; G. Schiele & Co., pumps, and Wiese & Scharffe, handling machinery. For the evening, members of the American colony in Frankfort had arranged an Independence Day celebration, in which they were joined by the engineers.

On Saturday the delegates took train for Mannheim, where the celebrated automobile works of Benz & Co. were among the principal attractions. The great care taken in the manufacture of this company's cars, and the attention shown to detail, were greatly admired by the visitors.

Of more practical interest to many, however, was the plant of Heinrich



ASSEMBLING DEPARTMENT OF THE GASMOTOREN FABRIK, DEUTZ, GERMANY

Lanz, which is known throughout the world for its manufacture of locomobiles. These are compact power plants, in which a steam engine is mounted directly on its boiler, and in the smaller sizes they are made portable. The enormous use made of power units of this type in Europe and European colonies is shown by the fact that the Lanz machines alone aggregate in capacity about 1,200,000 horsepower, the total number in service being upward of 30,000.

Engineers at Mannheim

Mannheim also boasts branches of the two largest machinery building concerns of Switzerland, Brown, Boveri & Co., Baden, and Sulzer Bros., Winterthur. Both of these were inspected by the visiting engineers. The former specialize in steam turbines and electrical machinery, while the latter have done more, probably, than any other concern in the world to make the oil engine a commercial success. In addition they manufacture a large variety of power, pumping, heating, ventilating and refrigerating apparatus.

Some of the delegates made a trip to the model cement-making plant at Leinen and were given illustrations of the welfare work carried on for the benefit of its employes; while others inspected the industrial harbor, noteworthy in its activity and arrangement of electrically-operated dock machinery for a city so near the head of river navigation.

Sunday was given over purely to enjoyment. Most of the delegates participated in an excursion to Heidelburg, where visits to the old castle and its illumination in the evening with fireworks were features of a very pleasant day.

On Monday the party left for Munich, the last city to be included in the meeting, where there was an evening reception in the Hofbrauhaus. The following day, July 8, was devoted to short excursions and sight-seeing; and at 8:00 p. m. the concluding exercises were held and "good-byes" said in the Rathhaus.

During the business sessions, beginning at Leipzig, a number of interesting papers were read. The first of these, on "Technics and Culture of the Present Day," was presented by Prof. D. Lamprecht, who pointed out some of the practical features of relationship between modern culture and the advances in technical achievement.

Prof. G. Schlesinger, of the Royal Technical High School (university) at Charlottenburg, near Berlin, then took up the subject of "Practical and Scientific Management." After touching on the advantages and salient features of the various systems now in vogue, on both sides of the Atlantic, he referred to the possibilities offered by moving pictures in connection wth motion study.

The cinematograph is, he said, the mechanical personification of the three main principles of scientific management, namely, division of labor, time measurement and imparting skill.

It is especially the study of the third and most difficult part which is made possible by the moving picture, because it largely replaces the verbal method of teaching by that illustration; by the exact reproduction of each particular movement. The micro-time studies made in the United States by John C. Aldrich, with the use of moving films, were characterized by Prof. Schlesinger as having especial value.

Opposition to Hetzvogt System

He then spoke of the opposition appearing in Germany to the Hetzvogt system, which is similar to the Taylor system, and to the indiscriminate attacks made upon it in the Social-Democratic press of the empire. This opposition, in his judgment, is due to the fear that discovery of the time in which it is really possible for a piece of work to be accomplished will rob the workmen's organizations of their trump card. The latter has frequently consisted in the superior knowledge they possessed of the execution of work in its several branches,—a superiority which workmen have naturally understood how to use in making special contracts with their employers.

ANOTHER VIEW OF THE ASSEMBLING DEPARTMENT OF THE GASMOTOREN FABRIK, DEUTZ, GERMANY

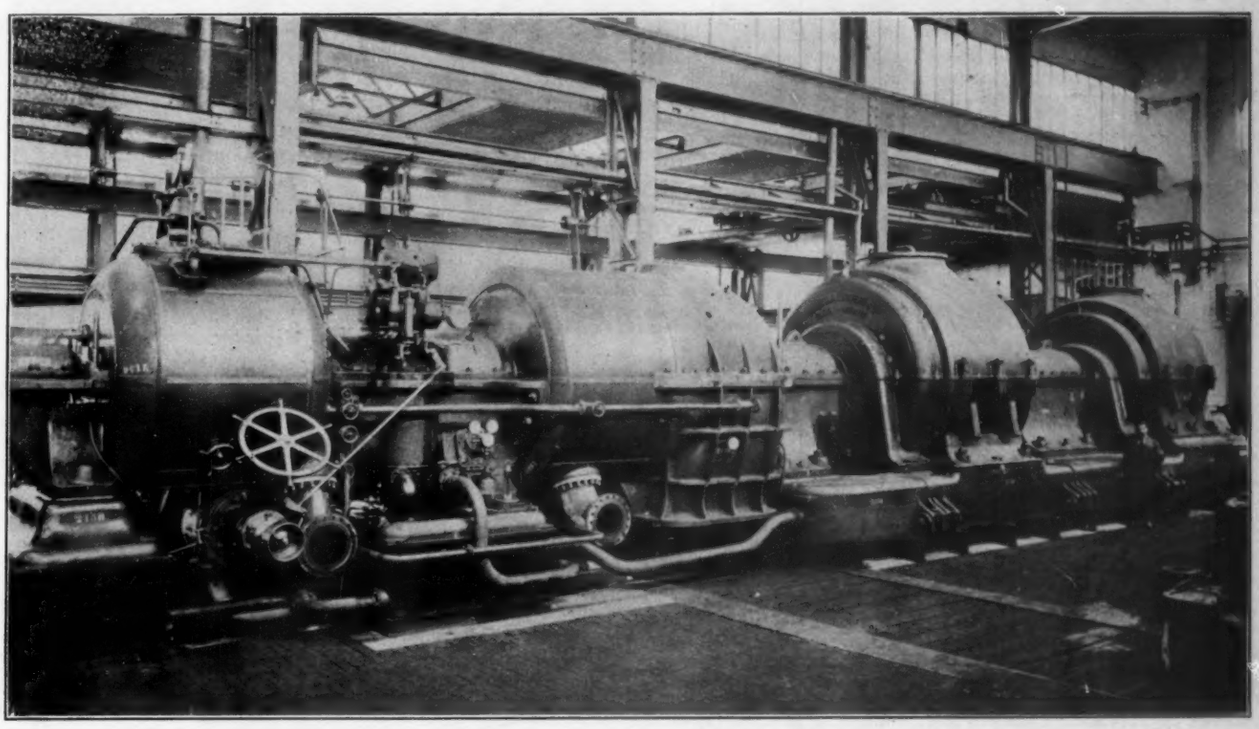
Speaking of objections to scientific management, as at present understood, Prof. Schlesinger pointed out that these may come from three sources: The employers, their employes and the public. On these points he said:

The employer is, in the first place, afraid of the costs which the introduction of this scientific management would entail. It must be confessed that the costs are high, but we must only take into consideration the fact

that the total costs of manufacturing diminish. Whoever sets up a pattern shop after having obtained models and drawings for years from outside sources, has also costs of introduction, nevertheless he determines upon the outlay because he knows or hopes that he will, in the end, lessen expenses.

The question whether the scientific management methods would entail unfair costs, is only to be answered from experience. A further objection is raised against the increase in the staff necessary for the carrying out of the scientific methods.

It must certainly be admitted that some heavy charges against the complete failure of scientific management have appeared, though it is easy to suppose the real cause may be traced to the selection of an entirely unsuitable re-organizer. The most successful enterprise may be ruined by too many order-sheets, by an exaggerated proc-



TEST FLOOR, BROWN, BOVERI & CO., MANNHEIM, GERMANY, SHOWING 14,000-HORSEPOWER STEAM TURBINE, WITH HIGH AND LOW PRESSURE CYLINDERS, DRIVING TWO GENERATORS

ess of standardizing and by false cards of instruction, etc. The manufacturers must, therefore, guard themselves against the *philanthropists* who spring up today like mushrooms, and only select those people for the purpose of re-organization of whose experience and efficiency they are assured.

Industrial Management

An illuminating address on "Industrial Management" was given by James Mapes Dodge, of the Link Belt Co., who opened with a reference to the introduction of the scientific system into the works of his company and those of the Tabor Mfg. Co., at Philadelphia. After reviewing various phases of the problem, suggested by his own experience and observation, Mr. Mapes dwelt upon the necessity for intelligent co-operation between employers and their men, as follows:

The very foundation of scientific management is increasing prosperity by intelligent co-operation. It is known to all that industrial unrest comes from the lack of agreement as to what shall be the division of the earnings of an establishment. Bad management and exploitation of an industry hold down the profit, and if at the same time the workers feel that they are doing their best and should receive more wages, we have a condition leading to mutual mistrust and consequently industrial disagreement, the result of which we all know only too well.

If, on the other hand, the management of an establishment is all that can be desired in the matter of its accounting, selling and advertising, and other departments, and the shop is behind either because of obsolete machinery or inefficient, untrained and dissatisfied operatives, the same results may be looked for. If, however, the fact is recognized that neither employer nor employe is alone to be benefited by the introduction of scientific management, but that it is essentially and necessarily a matter of mutual good, enlightenment and co-operation, it puts a new phase on the matter.

In its essence, scientific management involves a complete mental revolution on the part of the working man engaged in any particular establishment or industry—a complete mental revolution on the part of these men as to their duties toward their work, toward their fellow men, and toward their employers. And it involves an equally complete mental revolution on the part of those on the management's side—the foreman, the superintendent, the owner of the business, the board of directors—a complete mental revolution on their part as to their duties toward their fellow workers in the management, toward their workmen, and toward all of their daily problems.

If the employer feels that scientific management is merely a method by which he makes his workmen exert themselves very much harder, and entirely to his own gain, he had better abandon all consideration of the subject and stick to his present methods, or else go out of business. If on the other hand, the workingman feels that scientific management is simply an ingenious scheme to exhaust him physically, and permit all his other conditions to remain as they are, he, too, is in an unfortunate intellectual state. It is necessary for both of these interested groups to realize that they must change their view and earnestly desire to assist each other.

If the employer will recognize that each of the names on his payroll represents a human manufacturing unit, entitled to a fair and living return on its physical and mental investment and in addition thereto a reasonable profit to cover other things besides food, clothing and shelter, a proper frame of mind will be established mutually to give that which is most desired—the highest reasonable and proper recompense for effort and investment.

If this mental attitude can be made permanent in both the employer and employe, and each recognizes the necessity of increasing the output in order to increase the net gains, then scientific management comes into its own and the greatest good that it is possible for it to bestow can be given

to all, and the artificial barrier between the employer and employe is removed for all time.

In behalf of the visitors, Prof. W. F. M. Goss, president of the American Society of Mechanical Engineers, paid fitting tribute to the excellence of the arrangements made for the trip, and expressed to their hosts the thanks of all present. The idea of a joint session, he said, originated in the thought that both the German and American societies have much in common and can find many means of being mutually helpful.

Prof. Goss then spoke of some of the "Fundamentals of American Engineering Practice," and reviewed the opportunities for the engineer in connection with industrial management. Concerning one of the most important of these, he said:

The extensive use of special machinery in any manufacturing industry imposes heavy responsibilities upon its engineering staff. A definition of the article to be manufactured precedes the installation of equipment. The various steps to be taken in fabricating the article are reduced to the smallest practicable number, are made as direct as possible, and proceed in a predetermined order. These factors having been determined, the machines to be employed are selected, or if not available are designed and constructed. When in due time the establishment begins its operations, the part which each operator is to perform will have been defined. The development of these matters is for the most part a task for the engineer, and one result which has attended the extensive use of special machinery in the manufacturing industries of the United States, is to be seen in the numerical growth and in the increased technical strength of their engineering staffs.

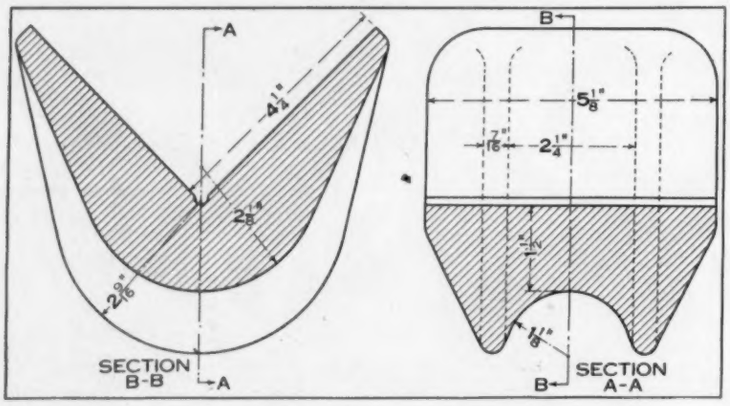
The importance attaching to the machine as a factor in industrial production has emphasized the necessity of maintaining equipment in a high state of efficiency. This condition is not satisfied merely by keeping individual machines in good repair. It implies that the whole factory embracing an aggregation of individual machines shall work together as harmoniously and effectively as the state of the art will permit. An existing machine or group of such machines, even when too new to be in need of repair, should sometimes be thrown out as no longer serviceable to make room for those of higher efficiency or greater capacity. The question is not whether the old machine is good, but what may be accomplished in improving the quality or in reducing the cost of work by putting a new machine in its place.

If the manufacturers of the United States have been more ready than the people of other countries to proceed with such changes, they have had a greater incentive for so doing in the higher price of their labor, for the higher the cost of labor, the greater the amount of capital which may be spent in replacing existing machines or installing new machines for the purpose of reducing labor costs. Other factors also have an influence. For example, a company manufacturing heavy machinery reports that the capacity of an important department of one of its plants has been more than doubled in the past few years merely by changing machines, old machines having been from time to time taken out and new and more powerful ones substituted. The total number of machines in the re-equipped department is the same as before, the floor space is practically unchanged, and there has been no extra cost for buildings. The change, however, has lowered the labor cost per unit of production, while the scale of wages paid the workmen has been increased. The results have more than justified the expenditure of capital, not only for the new machines, but also for the increased power required to drive them.

A subject considered at this meeting in which the visitors had no direct concern, but which interested them nevertheless, is the proposal now pending before the Verein Deutcher Ingenieure to make more liberal provision for pensions to retired officials. Care of salaried officials, after their terms of office have ended, is already practiced; and in future ten years' service will carry the right to a pension under reasonable conditions. The minimum amount proposed is one-third of the salary at time of retirement, with a rising scale corresponding to years of service.

With the end of the meeting, at Munich, some of the delegates have returned home via Paris, London or other routes and the remainder are leaving on further trips of their own planning.

There was apparently the feeling that only pleasant, profitable memories of the journey would be carried away by the visitors; and the hearty vote of thanks tendered by the Society to its host, the Verein Deutcher Ingenieure, was supplemented by many privately given. Altogether, it has been a most memorable occasion.



CAST STEEL CORNER GUARD FOR ROPES

Corner Guard for Ropes

For protecting rope slings when handling heavy crates of machinery during the erection of a large manufacturing plant, C. F. McGill, machine shop superintendent for the Busch-Sulzer Bros. Diesel Engine Co., St. Louis, devised the corner guard shown in the accompanying illustration. It consists of a steel casting shaped on one face to fit the corner of the crate and rounded on the other with a groove for carrying the rope. For ropes up to 2¼ inches in diameter the guards are 5⅛ inches long, with the lips or angles fitting over the box each 4¼ inches wide. The guards not only protect the ropes from wear, thus avoiding accidents and prolonging the life of the sling, but they also distribute the load and thus prevent the crate or box from being broken or warped.

West Virginia's Coke Output in 1912

The quantity of coke made in West Virginia in 1912 was 2,465,986 short tons, valued at $4,692,393, compared with 2,291,049 tons, valued at $4,236,845, in 1911, according to E. W. Parker, of the United States Geological Survey. The increase in 1912 was 7.64 per cent in quantity and 10.75 per cent in value. In spite of this increase the production of coke in West Virginia in 1912 was smaller than that of any year from 1905 to 1910. The smaller production in the last two years is attributable to the larger production of coke from West Virginia coal at plants in other states. In 1912 the quantity of coal made into coke in West Virginia was 4,061,702 short tons. It is probable that the quantity of West Virginia coal made into coke in ovens outside of the state exceeded 5,000,000 short tons. In the coke-making as in the coal-mining industhy West Virginia suffers from having relatively little home consumption for her products. Eighty per cent of the coal mined in the state and nearly all coke made is sent to consumers in other states.

STEP-PROCESS FURNACE

To be Given Exhaustive Test on Cuyuna Range.

John T. Jones, metallurgist, of Iron Mountain, Mich., who for several years has been experimenting with a process of treating low-grade iron ores, has transferred his activities to the Cuyuna range. It is reported that the inventor and his associates have become interested in several properties and that the step-process furnace erected at Republic, Marquette range, will be removed to the new Minnnesota field and given an exhaustive test there.

Shipments from the Cuyuna are proceeding at a rate which indicates an outgo of a million tons, possibly more, this season. The leading producers are the mines of the Rogers-Brown interests, the Kennedy property and the two Armours. The hydraulic system as applied to stripping has been productive of excellent results at the Carlson tract of the Pittsburgh Steel Ore Co. Ore has been uncovered. The average depth of the overburden is 50 feet. There will be at least two other open pits on the range within the next year. One of these, the Inland Steel Co.'s Thompson property, has suspended underground mining operations, preparatory to the institution of stripping work. At the other mine—the Pennington of Tod, Stambaugh & Co. of Cleveland—excellent headway has been made with the open-pit development. The steam shovel method is employed.

Stripping at Mahoning Mine

For years the world's greatest open-pit producer of iron ore, but now in that particular ranking second to its big neighbor, the Hull-Rust of the Steel Corporation, the Mahoning mine at Hibbing, Mesaba range, is this year doing nearly double the work it has usually carried on during the summer season. Both the Steel Corporation and so-called independent interests are associated in the control and operation of the property. While the season's output of the Mahoning will be about normal, approximately 1,500,000 tons, much more stripping than usual is being accomplished. Three steam shovels are engaged in removing overburden during the daytime, and two are employed in that work at night.

Mississippi Charcoal Furnace

The Memphis Mining & Mfg. Co., Winborn, Miss., advises it is opening its carbonate of iron ore mines at Winborn for a shipping capacity of 500 tons daily to the Birmingham, Ala., district. It also is building a 10-ton cold blast charcoal furnace. Mining equipment and the furnace will cost $50,000. Orders for the equipment have been placed. A. C. Jones is president of the company, W. S. Allen vice president, and Marion Allen secretary and treasurer.

EARNINGS INCREASE

Lackawanna Steel Co. Makes Good Showing in Report.

Earnings of the Lackawanna Steel Co. and its subsidiaries for the second quarter of 1913 were $1,909,924, compared with $888,426 for the corresponding quarter in 1912, an increase of $1,021,498. After the payment of bonded interest and allowances for the sinking funds and depreciation, the quarter showed a total profit of $1,012,675, compared with $85,545 for the previous year, an increase of $927,129.

The report for the first half of the year is equally good. The total income was $3,513,469, compared with $1,200,830, the preceding year, an increase of $2,312,639. Profits were $1,755,195, while for the first half of 1912 there was a deficit of $365,226, a change of $2,120,422. The first half profits were increased by $267,201, through the sale of property of subsidiary companies, making the total surplus for the first half $2,022,396. Unfilled orders on June 30 were 436,675 tons, compared with 564,990 tons on June 30, 1912, a loss of 128,315 tons.

COMPARATIVE STATEMENT OF LACKAWANNA STEEL CO.'S EARNINGS FOR FIRST QUARTER AND FIRST HALF OF 1913

	Second Quarter			First Half		
	1913.	1912.	Increase.	1913.	1912.	Increase.
Inc. from mfg. and operat'g.	$1,739,924	$702,668	$1.037,255	$3,125,952	$ 815,108	$2,310,844
Other income	170,000	185,757	*15,757	387,517	385,722	1,795
	1,909,924	888,426	1,021,498	3,513,469	1,200,830	2,312,639
Int. on bonds and debent.	437,433	437,487	*54	874,912	874,983	*71
	1,472,491	450,938	1,021,552	2,638,557	325,847	2,312,710
Less, sinking funds on bonds and exhaustion of miner'l.	124.037	72,270	51,766	231,705	161,771	69,934
Depreciation and renewals	335,778	293,122	42,657	651,656	529,302	122,354
	459,815	365,392	94,423	883,362	691,073	192,288
Profit	1,012,675	85,545	927,129	1,755,195	**365,226	2,120,422
Special profit on sale of capital assets of sub. comp's.	.....	.....	.....	267,201	.....	267,200
Total profit	.....	.....	.....	2,022,396	**365,226	2,387,622

*Decrease. **Deficit.

The state of Alabama has agreed to furnish the Tennessee Coal, Iron & Railroad Co., perfect title to 1,000 acres of mineral land. The company is to pay the state $25,000. The company acquired the land, but the mineral rights had not been transferred when the land was given out on homestead claims.

OBJECT TO RATES

On Pig Iron From Virginia to Pennsylvania and Jersey Points.

Washington, July 15.—Following their recent victory when the Interstate Commerce Commission refused to allow the railroads to increase pig iron rates from their furnaces to Pennsylvania and New Jersey points, Virginia makers last Friday filed a petition with the commission objecting to rates to eastern points. It is charged by them that rates from the Virginia furnaces are discriminatory to the advantage of furnaces of Pennsylvania, New York and Ohio.

In this connection, the complainants make the claim that the per ton mile rate from their furnaces to eastern destinations are from 30 to 50 per cent higher than the per ton mile rate applying to their competitors for points of substantially equal distance. As an illustration the petition cites the rates from Low Moor and Roanoke, Va., and two principal pig iron shipping points of that state, to New York, Boston, Philadelphia and Baltimore, these four cities being representative of the eastern destinations, and compares them with rates to the same destinations charged competitors. A common example deals with the rate from Low Moor to Baltimore. The distance is 255 miles, the rate $2.45 and the rate per ton mile is placed at 9.6 mills. From Pittsburgh to Baltimore, a distance of 329 miles, the rate is $2.15, and the rate per ton mile 6.5 mills.

The complainants are the Low Moor Iron Co., Low Moor and Covington; the Alleghany Ore & Iron Co., Iron Gate and Buena Vista; the Oriskany Ore & Iron Corporation, Reusens; the Princess Furnace Co., Glen Wilton; the Virginia Iron, Coal & Coke Co., Roanoke, Radford and Pulaski, and the Pulaski Iron Co., Pulaski. The defendants are the Chesapeake & Ohio et al.

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Index is Ready

The index for Vol. LII, being for the six months from Jan. 1 to June 30, 1913, is now ready for distribution. It will be sent to those who have received it in past years, and to any other subscribers who so request.

Some Market Trends

It is suggesting no new thought to say that the iron and steel buying market has been suffering from a wave—a tidal wave indeed—of adverse sentiment. It is true there are certain definite influences tending to restrict buying, such as the tightness of money, but they are not sufficient to account for existing conditions. Were money so tight as to shut off all forward buying, then it would be too tight to permit the conduct of current business at the full rate; there would already have been a very material restriction.

Investigation clearly discloses that the individual buyer, in holding off, is actuated by influences which current usage denominates "sentimental", for, instead of presenting clear cut arguments that this or that current trend is going to make this or that adverse development occur, he deals in more general terms and professes fear that when so many other men have doubts as to the future, their conduct is going to bring about the result feared. Sentiment, we all know, is a powerful influence. It has produced panics and it has produced booms. Many times, in the old days of unrestrained price fluctuations, the iron and steel market has been pushed to ridiculous heights through sentiment, by purchases which were entirely unnecessary.

Against sentiment, when it is not backed by facts, it is well to oppose facts, and some current market trends, which are definite facts, may be considered with profit. Sentiment in the market has been adverse for months, and were such sentiment well grounded, it is impossible after this lapse of time that the definite market courses should not reflect most clearly the unfavorable influences. Yet citations of the most serious import indicate an absence of such unfavorable trends in actual conditions.

Of vital importance, naturally, is the rate of steel production. Our June blast furnace statistics showed that the steel works produced pig iron at the average rate of 62,544 tons daily during June. The average rate during the half year, by far the greatest half year yet experienced, was 63,930 tons, the June rate being a decrease of less than 2.2 per cent from this average, a decrease attributable solely to weather conditions, but which is so small that it would be entirely inconsequential if due directly to decreased demand.

Prices of steel have been maintained as well as production. The general advancing tendency ceased early last October. Today there is not a single product of the steel industry proper which is quotable at a measurably lower figure than on Oct. 15, 1912. Meanwhile there have been fluctuations, sheets and wire products advancing and then declining, and wrought pipe being reduced and then advanced, but the net change is practically zero. Even in manufactured goods almost as much can be said. Railroad spikes and shafting advanced superficially and then declined, the advances having been practically simply on paper. In unfinished steel, the showing is, if anything, still stronger, for billets, sheet bars and rods are quotable fractionally higher than on Oct. 15 last.

Iron ore shipments down the lakes have been at record rate, the June total exceeding not merely that of any preceding June, but of any preceding month in the history of the lake trade. The total movement to July 1 passes the corresponding figure for 1912 by 2,434,371 tons, and that for 1910, the previous record by 1,206,784 tons. If the iron industry had not been in full swing to date, June would hardly have broken all previous monthly records.

The three very important trends just referred to show no adverse development to date. It may be argued that pig iron shows an adverse trend, since it has been declining, but in pig iron also there is a favorable trend. A decline began late in December, and for a time was barely perceptible. Month by month prices declined faster and faster, but a few weeks ago the rate of decline clearly decreased and in the past two or three weeks prices have shown a stationary or advancing tendency. The downward movement was pronounced and it would be strange indeed, discordant with precedents, if the present arrest should prove merely an incident. The decline we had with us for more than five months and an absence of further decline is a distinctly favorable trend.

For months buyers have suggested by their attitude that they considered the iron trade booked for poorer times, but if so, ought not something definite have developed by this time in the actual movements of materials and prices? Much can be said of the position and prospects which is unfavorable, but the

plain facts cited upon the other side should be given due consideration.

An Orderly Reaction

Such official statistics as have been recently published regarding the order books of leading steel makers, tend to show that the switch in the market from a base of new business exceeding capacity to one of only fractional capacity, is proceeding in an orderly and uniform manner.

An interesting comparison of the relative positions in this respect, of the United States Steel Corporation and the larger independent makers is offered by reports of business in hand recently issued by the former and the Lackawanna Steel Co. These statements, giving by quarters the unfilled tonnage of these makers since the beginning of 1912, when the recent large buying movement assumed extensive proportions, is as follows:

	Steel Corporation.	Lackawanna Steel Co.
June 30, 1913	5,807,317	436,675
March 31, 1913	7,468,956	623,816
Dec. 31, 1912	7,932,164	626,996
Sept. 30, 1912	6,551,507	569,977
June 30, 1912	5,807,346	564,990
March 31, 1912	5,304,841	401,475
Dec. 31, 1911	5,084,761	289,971

It is shown that the high point in accumulated business in the case of both companies was reached at the close of 1912. As indicated by the figures, the rising volume of sales was checked some time during the first quarter of the present year. Alluding to the monthly statistics of the Steel Corporation, it is shown that this change actually came in January of this year. This, of course, is assuming that the largest maker was continuing then its maximum capacity of production and shipments which it had reached some time before. Otherwise the unfilled tonnage statements would not clearly reflect the new buying and would be misleading. Its activities continue upon that scale today. Similarly, the Lackawanna Steel Co. is operating at full speed.

The sharp slump in the extent of the market for steel products as revealed by the figures given, fell within the second quarter of this year, just ended. New bookings in the first quarter of this year, while beginning to taper off, were able practically to hold their own against record production and shipments. The loss in that period was 463,208 tons or 5.84 per cent by the Steel Corporation and but 3,180 tons or 0.50 per cent by the Lackawanna Steel Co. During the second quarter, the Steel Corporation order book declined 1,661,639 tons, or 22.24 per cent. In the same period, the Lackawanna Steel Co.'s tonnage dropped 187,141 tons, or 30 per cent.

The steel industry at present as expressed by the reports of these makers, is still a little ahead in tonnage of its position at the onset of the recent record-buying movement early in 1912. The Steel Corporation still has a credit of 722,556 tons and the Lackawanna Steel Co. of 146,704 tons against the records of that date. In both cases, the tonnage of these makers on June 30, of this year, was within a fraction of 1 per cent of where it stood on March 31, 1912, after the market had enjoyed several months of more active trading.

If, as authoritatively announced, the Steel Corporation has the "most liquid" order book in its history, the position of the independent steel makers, as reflected by the reports of a typical producer, the Lackawanna Steel Co., shows up equally as favorably.

Germany's Strides in Iron Production

A few centuries ago, Germany made more iron than did the United States, because the United States made none. A half century ago, though the statistics are somewhat incomplete, the production of the two countries was not dissimilar. In 1875, though not in immediately preceding and following years, Germany made slightly more pig iron than the United States. The rapid increase in American production in the eighties left Germany far behind in the race, so that in 1890 German production was only one-half our own. In the next decade, Germany gained more rapidly, so that in 1900 Germany's production was 61.9 per cent of our own. Then came our turn again, and by 1905 our output had so increased that Germany's was only 47.3 per cent as great. Since then it has been Germany's turn to gain the more rapidly, so that in 1910 the Germans made 54.8 per cent as much pig iron as we did, and in the first half of this year there has been a further gain. Germany's rate of production in the first half of this year was approximately 19,000,000 tons a year, or 57.5 per cent of our own rate of 33,000,000 tons. If we feel satisfaction that our rate has been remarkably high, the satisfaction should be tempered by reflection that another country has been gaining still more rapidly, and it would be well to consider the various means Germany used, the employment of technical men in relatively subsidiary positions, the use of new and improved methods and machinery, and the syndicate system of distribution, which, while by no means in favor with American politicians, does seem to show a very material success.

Railroad Buying Needed

When the railroads of the United States bought during the first half of 1913, according to the most reliable estimates, a total of 85,000 cars, they provided a requirement of at least 1,000,000 tons of rolled steel products. Apart from rails, this tonnage represents the railroads' most important contribution to the unprecedented production of iron and steel makers during the past six months.

Considerably more than half the million-ton requirement was originated during the months of January and February, when more than 50,000 cars were ordered. Since then, there has been a sharp decline in equipment purchases by the railroads. In June, only the meager total of 2,500 cars was ordered. The present outlook indicates this dullness will probably continue throughout the summer.

With its present great capacity and the extensions that are already actually under way, the iron and steel industry, to a great extent, for its general prosperity must depend upon a large and steady buying volume by the railroads. In no direction is the recent slowing down of new business in the iron and steel industry more clearly reflected than in the light car buying of the recent months. Until the railroads are disposed or in a position to renew their liberal purchasing activity of six months ago, the expected improvement of the iron and steel market cannot be attained.

TRADE NOTES

ALLENTOWN, PA.—Creditors of the Webb Co., maker of auto fire apparatus, have recommended that Robert E. Wilbur be appointed receiver.

BERLIN, CONN.—The Berlin Wheel Co., according to an agreement entered into July 1, will be dissolved.

BUFFALO.—S. Webber & Son, Louisville, Ky., have opened an office at 447 Ellicott Square, and placed L. Meyer in charge.

CANAL DOVER, O.—The Acme Boiler Works has been dissolved by Canal Dover creditors to Godfrey Smith, who has been operating the plant for over a year under a lease from the creditors.

LEBANON, PA.—The old Lebanon Iron & Steel Co. rolling mills were recently bought and have been dismantled by Michlovitz & Co., Harrisburg.

NEWARK, N. J.—George Paddock, of Newark, and Martin E. Kern, of Allentown, Pa., have been appointed receivers of the Lansden Co., manufacturers of automobiles with a plant at Newark.

PHILADELPHIA.—Walter C. Harris, receiver for the Dunbar Furnace Co., recently filed the first and final account of the affairs of the company.

PHILADELPHIA.—The Alert Tool Co., a reorganization of the J. E. Poorman Co., Ins., is now located at 221-23 North Twenty-third street, and is handling a line of small tools.

PHILADELPHIA.—Plans are being considered by the Taylor-Wharton Iron & Steel Co. for the concentration of manufacturing operations at one point. There are now six plants, the chief one at High Bridge, N. J.

PUEBLO.—COL.—The Colorado Steel & Iron Co. has changed its name to the Colorado Industrial Co. and renewed its mortgage of $45,000,000 under the new name.

QUINCY, ILL.—A. G. Bickhaus, John J. Fisher, Quincy, Ill., and E. H. Huenefeld, Cincinnati, have been appointed receivers for the Sheridan Stove Mfg. Co., Quincy, following a hearing of stockholders before Judge Akers in the Adams county court.

ST. LOUIS, MO.—The Cambria Steel Co., Johnstown, Pa., has opened offices in the Chemical building, St. Louis. The company recently took out a license to do business in Missouri.

TOLEDO, O.—The Toledo Flanner Boiler Co. has changed its name to the Toledo Boiler & Tank Co.

WATERBURY, CONN.—Judge Burpee has signed an order for the sale of the Waterville Cutlery Co. to the Clark Bros. Cutlery Co., Kansas City, Kan., for $15,000.

WILMINGTON, DEL.—A court order for the sale of the property of the Diamond State Steel Co. has been granted.

WORCESTER, MASS.—The Coppus Engineering & Equipment Co. has moved its plant from 64 School street to 172 Union street.

YOUNGSTOWN, O.—The 18-inch mill at the Mahoning Valley Works of the Republic Iron & Steel Co., which was erected by Wick & Ridgeway for the manufacture of iron rails, later being part of the Mahoning Valley Iron Co., and then absorbed by the Republic Iron & Steel Co., is to be abandoned.

MEN OF THE IRON TRADE

M. M. KOHN, manager of the Multiple Unit Electric Co., 136 Liberty street, New York, is in Europe.

WILLIAM H. DONNER, president of the Cambria Steel Co., has gone to Canada where he will spend the summer.

B. E. HUTCHINSON has been elected vice president of the Blair Engineering Co., with offices at 17 Battery place, New York City.

C. IVAN MURRAY, Toronto, Ont., has accepted a position as metallurgical engineer with the Pittsburgh Electric Furnace Co., Pittsburgh.

A. D. BLACK, for seven years office manager and purchasing agent for the Toledo Shipbuilding Co., has been elected secretary and assistant treasurer of the company.

H. T. NELSON, of Lebanon, Pa., has been appointed general manager of the Schuylkill Haven Rolling Mills, Pottsville, Pa., which resumed after two years of idleness.

W. M. STERRETT, who has been in charge of the steel construction work of the McClintic-Marshall Construction Co. at the Panama canal, sailed for the United States July 3.

HENRY L. WRATTEN, superintendent of the plant of S. Freeman & Sons, Racine, Wis., after more than 25 years of service, has tendered his resignation, to take effect Aug. 1.

WILLIAM H. MacEWAN has been appointed assistant secretary of the Philadelphia & Reading Coal & Iron Co. He has been connected with this company for 20 years.

SAMUEL T. GREAVES, foreman at the foundry of the Vanadium Metals Co., Croton, Conn., has resigned to take charge of the foundry of the new plant of the Vanadium Metals Co., Pittsburgh.

FRANCIS A. WALSH, of Milwaukee, at one time prominent in the tin and galvanized ware business of the middle west, now retired, celebrated his 66th birthday anniversary on July 10. Mr. Walsh founded the Walsh Canning Machinery Co. in Milwaukee in 1883 and in 1901 sold out to the American Can Co., which moved the works to Chicago. He retired from active business in 1903.

JOHN O'KEEFE, who recently retired as superintendent of the American Steel & Wire Co.'s works at Farrell, Pa., was connected with the company and its predecessors for 40 years, and is eligible to the highest pension granted by the United States Steel Corporation. Mr. O'Keefe was placed in charge of the Washburn-Moen Co.'s wire mills at Worcester, Mass., in 1873. He was transferred to the Salem, O., works of the American Steel & Wire Co. in 1902, took charge of the Cleveland mills in 1905, and went to Farrell in 1909. He has been succeeded as superintendent by August Mann, Anderson, Ind.

JOHN O'KEEFE

CHARLES S. BARTON, of the Rice, Barton & Fales Machine & Iron Co., Worcester, Mass., who recently underwent a serious operation for throat trouble, will leave soon for an extended tour abroad.

H. J. CROSS, cashier of the Republic Iron & Steel Co., at Gilbert, Minn., has resigned to accept a position in Duluth. Before his departure, Mr. Cross was tendered a banquet by employes of the company.

F. RODNEY PLEASANTON, in charge of the business economy system at the Pennsylvania Steel works, at Steelton, Pa., for some time, has resigned to take charge of works at Allentown for the International Motor Co.

ALLEN E. RANSOM, new manager of the Seattle office of the Caldwell Machinery Co., has been identified for many years with the industrial development of the northwest, and was formerly a representative of the Westinghouse Electric & Mfg. Co.

SUPERINTENDENT ANDERSON, of the Toledo Metal Wheel Co., was given a banquet by a number of the company's employes recently, the occasion being the retirement of Mr. Anderson from active management. F. E. Southard, president, was present as toastmaster.

D. A. MITCHELL, for the past five years with the Republic Iron & Steel Co., Virginia, Minn., has resigned to enter the employ of the state, with F. A. Wildes Jr., of Hibbing, state mine inspector. Mr. Mitchell will be located at the Hanna and Wacouta mines at Mountain Iron and the Helmer mine at Kinney.

FRANK J. WHITGROVE, for five years superintendent of the Scott street works of the American Steel & Wire Co., Lincoln, Ill., has been transferred to De Kalb, Ill., where he assumes the general superintendency of the Ethen-West Works in that city. He will be succeeded at Lincoln by Louis Booth, New Haven, Conn.

NEW BUSINESS

The machinery market at the chief centers of trade continues to vary. Few new large inquiries have come out recently, and those sent out earlier have not yet been filled. In the main, business is maintained through small orders, well scattered. The railroads are known to be in need of equipment, but show no inclination to close in full. Little improvement is expected in the railroad situation before fall because of financial conditions. The government is in the market for probably $100,000 worth of machine tools and various equipment for fitting up at Mare Island, Cal., a new supply ship, the Prometheus. Second-hand tools are in fair demand, but prices are moderate.

In New York, new demand for machinery does not improve. The Delaware, Lackawanna & Western list, amounting to eight to ten tools, is still held up. The Pennsylvania railroad, which was out for a large list of various tools for delivery at Altoona, Pittsburgh and other points, estimated at $400,000, has been making some further awards, but it is understood it has decided not to buy at this time its full requirements. The Virginian railway has out a new list of about 50 tools, aggregating approximately $75,000, for delivery at the Princeton, W. Va., shops. Bids go in this week. The principal recent bookings of consequence by New York houses have been from the government. The 75 or more tools asked by the government for Pearl Harbor, Hawaii, delivery, have now been generally distributed among a number of sellers. The list recently sent out by the Virginia Polytechnic Institute, Blacksburgh, Va., is larger than first reported. It calls for 40 lathes of 14 and 16-inch sizes and a number of other tools, which will aggregate a cost of $50,000 or more. One lot of 35 second-hand lathes recently sold brought only fair prices.

In Pittsburgh, conditions are seasonably quiet, with no immediate prospects for any decided improvement. Small orders, of course, continue to be placed, but there is no snap to buying and no inquiries of note are pending. Builders of heavy rolling mill machinery, although well protected with orders, are not optimistic, and several have expressed the fear that quiet will prevail a half year and possibly longer.

In Cleveland, machinery business has been fairly satisfactory during the past week, dealers state. Inquiries remain scattered, and come chiefly from the automobile and allied industries, but orders are being placed, as contrary to conditions last month. Railroad business has not been active for some time past. Fair demand for electrical machinery, especially small units. Second-hand machinery business practically unchanged, with bids going in on four complete plant equipments.

In Cincinnati, the machine tool trade is quiet and business is dull. Orders for the most part are for single tools, though some large orders are known to be pending, being held up in the general hesitation now apparent. The strike of molders here is expected to have its effect on the tool business, though this cannot be forecasted. The Lodge & Shipley Machine Tool Co. has resumed operations after its plant was closed for a week for the summer rest. Second-hand machinery trade is practically dormant.

ALABAMA

BIRMINGHAM.—The Alabama Power Co. is proceeding rapidly with the construction of its hydro electric plant at Ocampo. W. W. Freeman is vice president of the company.

BIRMINGHAM.—The $500,000 plant of the American Radiator Co. at North Birmingham, Ala., now is operating. The buildings cover about ten acres. About 200 tons of iron will be molded into radiators daily.

BIRMINGHAM.—The Tuscaloosa-Birmingham Railway Utilities Co. has issued bonds to the extent of $5,000,000 to assist in the construction of a tidewater line between Tuscaloosa and Birmingham, and for terminals, power houses, etc.

HUNTSVILLE.—The Huntsville Foundry & Machine Works has been expanded and is now incorporated with a capital of $50,000. The plant will be overhauled and improvements made. Officers are J. H. Leslie, president and manager; T. A. Leslie, secretary; C. M. Grace, treasurer and superintendent.

CALIFORNIA

LONG BEACH. — Construction work has started on the new plant for the Pacific Iron Mfg. Co., to be located on the Dominquez harbor tract. The company will manufacture iron utensils, electrical specialties, etc., and is capitalized at $75,000. Officers are W. H. Bennett, president; Geo. Shields. vice president; S. T. Wolf, secretary and treasurer.

SAN FRANCISCO.—The Brode Iron Wks. has been incorporated; $20,000; by R. J. Emma and W. R. Brode.

COLORADO

COLORADO SPRINGS.—New engineering shops to cost $10,000 will be constructed at Colorado College this summer. The lower floor of the building will be used for electrical and mechanical engineering laboratories, for which new machinery will be necessary.

CONNECTICUT

BRIDGEPORT.—The plant of the Bellamore Armored Car & Equipment Co. has been bought by the Blue Ribbon Auto Co., which will make extensive alterations and additions and continue making its cars there.

BRIDGEPORT.—The Coulton & McKenzie Machine Co. is building an extension, which will double the capacity of its gray iron foundry. It is installing a 15-ton electric traveling crane, an additional 15-ton cupola and an industrial railroad system. When the addition is brought to completion, the capacity of the foundry will be from 25 to 30 tons a day. The company turns out castings for the jobbing trade in addition to doing its own work.

BRIDGEPORT.—The Belknap Mfg. Co., which had been planning to do some building this spring and summer, has purchased a 116 x 625-foot site on Holland avenue, in the west end, and is now getting ready to build an entirely new plant, although construction work will probably not be started before next year. The new plant will be 50 x 325 or 350 feet, of which 50 x 150 feet will be occupied by the foundry. The foundry will be two stories and the remainder of the plant will be three stories. The present plant, which has been considerably extended during the past year, will be abandoned on the completion of the proposed plant.

HARTFORD.—The Hartford Drop Forging Co. is to build a forge shop, 56 x 40 feet, and a storage building, 40 x 26 feet.

NEW MILFORD.—The Kilborn Mfg. Co. advises that its new plant has been completed and fully equipped.

NORWICH.—The John T. Young Boiler Co. has completed its new foundry on Central wharf, and will start operations within a few days. The cupola has a capacity of from six to eight tons of metal per hour. An overhead trolley service will be added to the foundry equipment before long.

DELAWARE

DOVER.—The Jerome-Edwards Metallic Co., of New York City, has been incorporated; capital $515,000. The Electrical Specialty Co., of Baltimore; capital stock, $10,000.

DISTRICT OF COLUMBIA

WASHINGTON. — The government announces that the fitting up of the new supply ship, Prometheus, at Mare Island, Cal., navy yard, will require about $100,000 worth of tools and other machinery. This ship will be similar in its equipment to the Vestral,

which was fitted up at the Charleston navy yards a short time ago.

WASHINGTON.—Proposals were received by the Panama canal commission at Washton, on July 14, for the purchase of eight steel cantilever cranes which have been used on the Pedro Miguel and Miraflores locks. These cranes are all of large size and some of them are equipped with concrete mixing plants.

WASHINGTON.—Proposals will be received by O. Wenderoth, supervising architect, Treasury Department, for the construction of the following United States post offices, together with mechanical equipment, on dates given: Greenwood, Miss., August 4; Clarksville, Tex., and Menominee, Wis., August 19; Oneonta, N. Y., August 21.

WASHINGTON.—Proposals for forging press, iron and steel pipe, valves, etc., will be received at the office of the general purchasing agent, Isthmian canal commission, until July 29. Blanks and general information relating to these requirements (Circular No. 786), may be obtained from F. C. Boggs, major, Corps of Engineers, general purchasing officer.

WASHINGTON.—Proposals for a movable span or bascule over the French canal at Cristobal, will be received at the office of the general purchasing agent, Isthmian canal commission, until August 6. Blanks and general information relating to requirements (Circular No. 785) may be obtained from F. C. Boggs, major, Corps of Engineers, U. S. A., general purchasing officer.

FLORIDA

ST. PETERSBURG.—The stock of the St. Petersburg Hardware Co. has been increased from $75,000 to $150,000.

GEORGIA

QUITMAN.—Several business men here are planning to organize a company and erect a foundry for the manufacture of a patented molding machine, recently invented by W. W. McCarter.

IDAHO

BOISE.—Articles of incorporation for the Butte, Boise & Winnemucca Railroad Co. have been filed with a capitalization of $40,000,000. Chester N. Halverton, Boise, secretary of the company.

ILLINOIS

CHICAGO.—The Woodbridge Ornamental Iron Co. has been incorporated by Arthur L. Woodbridge, Frank Moe and William J. Bell, 69 W. Washington street, Chicago. The company does not expect to build a plant, but will lease space in a manufacturing building where a small shop for the production of ornamental iron stairways, elevator casings, etc., will be established. The shop will be equipped with some small tools.

CHICAGO.—The Independent Pneumatic Tool Co. is to remove its motorcycle manufacturing department into another factory in order to further increase the output of pneumatic tools. The Aurora factory will be henceforth devoted exclusively to the manufacture of "Thor" air and electric tools. The output will be 1,500 air tools and 500 electric drills per month.

ELGIN.—The Elgin Auto Sewing Machine Co. advises it will need additional machinery for a building, which is to be completed in three months.

MARENGO.—The Ellison Machine Co. has been incorporated; $10,000; by A. D. Ellison, W. F. Ellison and F. G. Stevens.

INDIANA

BRAZIL.—The Crawford & McCrimmon Co. has increased its capital $120,000.

GOSHEN.—The Sheet Metal Speciality Co. advises that its main line of manufacture is kitchen cabinet tin ware, but that it expects to branch out in other lines of sheet metal stamping work. The company also manufactures a combined extension and folding roof for silos. Officers are L. S. Nafziger, president; O. Nafziger, vice president; S. O. Nafziger, secretary and treasurer. (Incorporation noted July 10.)

INDIANAPOLIS.—The Stenotype Co., Indianapolis, advises it will begin building a plant at Indianapolis soon. The main building will be 500 feet by 52 feet and there will be three 40-foot wings. All will be of concrete and steel. It is expected the building will be completed by Dec. 1. The present output of the company, 100 machines, is to be doubled.

KOKOMO.—The Globe Stove & Range Co. advises that its plans for building an addition to its plant are not sufficiently matured to make definite statements and will not be for about 60 days.

KOKOMO.—The warehouse of the Lewellyn Furnace Co., the plant of the Butler Fence Machine Co. and the passenger station, freight house and grain elevators of the L. E. & W. railroad were badly damaged by fire July 6. The total loss has been estimated at $100,000.

LOGANSPORT.—The Logansport Oxygen Co. has been incorporated to manufacture oxygen and hydrogen gas; $75,000; by F. B. Wilkinson, A. E. Nelson and Bert Mills. Plans are being prepared for a factory building, 55 x 100 feet, and machinery to the value of $50,000, consisting of engines, generators, separators, purifiers and compressors will be installed.

NEW ALBANY.—O. E. South, treasurer of the Ohio Falls Motor Co., purchased the plant of the company at a receiver's sale and will re-organize the business. The manufacture of autos will be continued.

NEW ALBANY.—The Roberts & Conner Co. has purchased a tract of timber in Arkansas and will erect a large veneer mill. J. W. Conner is in charge of the purchase of equipment.

OOLITIC.—The local electric light plant was damaged by fire July 8, the total loss being estimated at $5,000.

KENTUCKY

CARLISLE.—The Bluegrass Produce Co. is considering plans for the establishment of an ice factory at a cost of $15,000.

LEXINGTON.—L. H. Ramsey is in the market for equipment for a 50-horsepower electric light plant.

LOUISVILLE.—The Old Mission Furniture Co. has increased its capitalization from $7,500 to $20,000, and will install additional equipment. C. Shaw, superintendent.

LOUISVILLE.—The McGrath Automatic Brake Co. has been organized with $10,000 capital stock by R. H. Menefee, J. A. McGrath and J. M. Scott to manufacture machinery and brakes.

LOUISVILLE.—The Louisville Gas & Electric Co. is considering the establishment of a central station steam heating plant, to serve the business section of the city. Pumps will be needed.

LOUISVILLE.—The machine shop of L. R. Veatch & Co., manufacturers of flour mill machinery, was damaged by fire recently.

LOUISVILLE.—As the result of the widening of the Government canal here, the Pennsylvania railroad will be compelled to build a new and larger bridge, while two new structures will be put up by the Federal authorities.

LOUISVILLE.—The Kentucky Pipe Line Co., recently organized by H. M. Byllesby & Co., to build a pipe line from West Virginia to Louisville, has let a contract for the work to the Standard Oil Co., which will supply the gas. It will furnish the material and equipment and perform all of the construction work.

PINEVILLE.—The Kentucky Utilities Co., which recently took over the local electric light plant, will enlarge it and provide current for power purposes.

MASSACHUSETTS

BUZZARDS BAY.—The machine shop of the Furst-Clark Construction Co. was recently damaged by fire. This company is general contractor for the Cape Cod canal.

LUDLOW.—The Ludlow Mfg. Co. has awarded the J. W. Bishop Co., Worcester, the contract for the erection of a storehouse at its plants. The building will be of brick, mill construction, six stories, and will cost $105,000.

SOUTHBRIDGE.—The Optical Lens Co., recently incorporated by George H. Dupaul, William A. Lockhart, Marshall A. Barney and Fred G. Burgess with a capitalization of $100,000, is to erect a plant in Worcester street. It will be 50 x 70 feet, two stories.

TAUNTON.—The White-Warner Co. is moving into its new foundry recently completed.

WORCESTER.—John E. Bradley, of the Osgood-Bradley Car Co., is to erect three eight-story buildings for store and manufacturing purposes on the site of the company's old plant in Grafton and Franklin streets. The project will involve an expenditure of between $800,000 and $900,000.

WORCESTER.—The business of H. G. Barr, manufacturer of sensitive drilling and tapping machines, passed into history this week with the sale of the good will, stock and equipment of the plant at public auction. The property was sold in lots to individual buyers and brought about $12,000.

MICHIGAN

ALBION.—Officials of the Commonwealth Power Co. announce that their plant, which was recently destroyed by lightning, will be rebuilt at once.

DETROIT.—Competitive bids are asked by the Detroit Lodge of Elks from Detroit and outside architects for a planned $350,000 home. Wm. J. Dawson is secretary.

DETROIT.—The Paige-Detroit Motor Car Co. has purchased a three-story factory building at 1145 West Grand boulevard, for $90,000, and will take possession immediately. The new building will be used for the manufacture of motors.

DETROIT.—The Loewick Hydro-Motor Co. of Detroit, is negotiating for a factory at Clare, Mich., in which to manufacture ball-bearings, water-power washing machines. It has been having the tubs made by other parties and proposes to do its own manufacturing.

DETROIT.—Gregory, Mayer & Thom, stationers and printers, are having plans prepared by Smith, Hinchman & Grylls for nine-story modern building on the site of the historic old Central market, Cadillac square. It will be 80 x 100 feet, of steel and reinforced concrete construction.

DETROIT.—Work on the construction of the Orpheum theater at Lafayette boulevard and Shelby street, 100 x 130 feet, has been started and it is expected to be ready for opening December 15. About 500 tons of steel will be required which will be rein-

forced with concrete. Smith, Hinchman & Grylls are the architects.

DETROIT.—Plans are being prepared by Architect Kahn for a five-story modern building at John R. and Elizabeth streets for the Joseph Mack Printing Co. It will be 100 x 200 feet of trussed steel and reinforced concrete and will be constructed of sufficient strength to permit of the addition of five more stories.

FLINT.—The Chevrolet Motor Co. has purchased the assets and business of the Little Motor Car Co. The former company is capitalized at $2,500,000. C. M. Begole, president.

MARQUETTE.—J. A. Roebling's Sons Co. has awarded a contract for the construction of an addition to its wire mill at Dollar Bay to the Worden-Allen Co. The building is to be 65 x 200 feet.

PONTIAC.—The Pontiac Machine & Foundry Co. has been awarded the contract for a new steel bridge over the Clinton river.

MINNESOTA

DULUTH.—The Marcey Spark Plug Co. has been incorporated to manufacture park plugs for gas and gasoline engines; 50,000; by John H. Marcey, George S. Munsey, M. L. Scott and B. T. Butler.

WINONA.—Fire destroyed the tin, wood, paint and pattern shops of the Pioneer Tractor Mfg. Co. on July 2. The loss was fully covered by insurance and the company does not expect any great delay in the production of its gas traction engines, as new equipment is being obtained and installed. The company advises that it expects to be in full operation again within a week.

MISSOURI

KAHOKA.—The Merrill Iron Works has secured the contract for supplying machinery for the Whitney & Plover Co. of Stevens Point.

MONTANA

MISSOULA.—The Jumbo Mining Co. has been incorporated to develop mining property in the Moyie-Yak mining district in Bonner county; $1,000,000; by John Carlson, John C. Wood, C. S. Ross, et al.

TWIN BRIDGES.—Bids will be received July 22 by City Clerk Julian A. Knight for system of water works. Plans include a 150-foot standpipe, mains and deep well. The people have authorized $17,000 in bonds.

NEW JERSEY

JERSEY CITY.—The Standard Oil Co. has started work toward rebuilding the portion of its plant at Constable Hook, recently destroyed by fire.

PASSAIC.—The Ball-Wood Co., Elizabethport, Pa., has purchased the old works of the Consumers' Match Co. at Passaic, and is moving its plant to that city, where it will continue its line of manufacturing, which includes the building of engines, engine parts, pipe bending and flanging and similar products. The Passaic property includes a machine shop 50 x 150 feet with an ell 30 x 50 feet, which the purchasers are now enlarging by several additions. The Elizabethport plant is to be abandoned, the real estate having been sold to the Singer Mfg. Co.

TRENTON.—Contractors Scott & Day will erect the $30,000 Willey public school at Broad Street Park. Work will begin next week.

TRENTON.—The McFarland Foundry & Machine Co. is busy filling orders for the manufacture of propellers for racing craft. For some years the McFarland company has been making propellers for high speed boats.

TRENTON.—The John A. Roebling's Sons Co. is making extensive improvements to its flat wire drawing shop, including an addition, 60 x 95 feet. When the addition is completed the wire drawing plant will be the largest of its kind in the east.

NEW YORK

ALBANY.—Bids will be received by Duncan W. Peck, superintendent of public works at the state capitol at Albany, N. Y., until Aug. 5, for power plants, electrical equipment and machinery and operating and lighting locks 20, 21, 22, 23, 25 and the Junction Lock at New London, of the Erie canal and for Locks 3, 5 and 6 of the Oswego canal.

AUBURN.—Construction work has started on a manufacturing plant to cost $90,000 for the Firth Carpet Co.

BUFFALO.—The Hewitt Rubber Co. has awarded a contract for a large power house. The Lackawanna Bridge Co. will do the steel work.

DUNKIRK.—The Atlas Crucible Steel Co., at its annual meeting of directors July 1, voted to increase its capital stock from $400,000 to $1,500,000, and elected officers as follows: President, A. H. Hunter; vice president, Edward Burgess; treasurer, C. P. Burgess; secretary, Geo. B. Smith.

NEW YORK CITY.—The Beck Duplicator Co., 491-93 Broadway, advises that reports stating that it plans building a plant in Berlin, Ont., are unfounded.

NEW YORK CITY.—The Clayville Foundry & Machine Co., Inc., has been incorporated; $5,000; by G. S. Humphrey and W. L. Voorhis, both of West New Brighton, N. Y.

NEW YORK CITY.—The F. L. Smith & Co., 50 Church street, advises its machine shop at Jersey City, N. J., will be moved to Elizabeth, N. J., when a plant there, now building, is completed.

NEW YORK CITY.—Geo. A. Fuller Construction Co. has the general contract for two large printing houses that are to be erected in New York City. One of these is for the Hill Publishing Co. at Thirty-sixth street and Tenth avenue and the other is at Lafayette and Franklin streets, for the Hollenbeck Printing Co.

NEW YORK CITY.—The I. S. Van Loan Railway Equipment Co., Inc., Woolworth building, with works at Reading, Pa., which recently absorbed the I. S. Van Loan Co., Inc., and the Rhodes Railway Equipment Co., has concluded a working arrangement with the Railway Equipment Co. of Toronto, Ltd., and proposes engaging in the manufacture of railway motor supply parts and railway motor controllers, etc. The company also proposes taking up the supplying of complete equipment for power houses and electric railway propositions, contemplating either new or second hand apparatus, and also engaging in the financing of railway and lighting propositions, either as new features or as reconstructed properties. The officials of the company are: President, E. W. Samuel, Mt. Carmel, Pa., who is also president of the Shamokin & Mt. Carmel Transit Co.; vice president and general manager, I. S. Van Loan; secretary and treasurer, Albert C. Case, 242 West Seventy-second street, New York City.

OHIO

AKRON.—An eight-story building, 125 x 125 feet, will be constructed here by the Leonard Construction Co., of Chicago, for the Quaker Oats Co.

BOWLING GREEN.—The Modern Motor Car Co. has been incorporated; manufacturing and dealing in automobiles, motor trucks, etc.; $1,000; by W. P. Abbey, D. I. Ladd, R. E. Ladd, J. A. Walker and T. E. Moore.

CANTON.—The Buckeye Tank & Seat Co. has acquired additional space for manufacturing purposes. Claude R. James, president.

CANTON.—The Geiger-Jones Co. has consolidated with three stamping and enameling plants at Bellaire, O. The consolidation will be known as the American Stamping & Enameling Co., capitalized at $2,000,000.

CINCINNATI.—Stanley Strubel, chairman board of commissioners, Hamilton county, will open bids July 25 for a new steel superstructure over the Little Miami river.

CINCINNATI.—The Barney & Smith Car Mfg. Co. will build steel passenger cars. The courts have authorized receivers to spend $175,000 on the plant to adapt it to such work.

CINCINNATI.—The city council, in accordance with a vote taken last November, is planning the sale of a $340,000 bond issue for the erection of a hospital for the treatment of tuberculosis patients.

CINCINNATI.—The Cincinnati Iron Works has been given a contract by the state board of agriculture for building an iron fence around the state fair grounds, Columbus. Several bids were offered for the work. The Cincinnati company bid $8,000.

CINCINNATI.—The J. B. Schroder Co., capitalized at $100,000, has been incorporated by J. B. Schroder, C. J. Frohmiller and J. R. Schroder, to take over the business of J. B. Schroder & Co., dealers in builders' hardware, who had been operating as a partnership.

CINCINNATI.—The Cincinnati Foundry Co., 4238 Mitchell avenue, Winton place, is making good progress in construction of its new plant and expects to be operating in the fall. The structure is to be 82 x 182 feet, of the "daylight" type, with side walls mostly of glass. One cupola and blower will be installed at first. Most of the equipmen has been bought. Gray iron will be the only output at first but aluminum may be added. The company is composed of John S. Backer, George C. Euskirehen and James B. Schumacher.

CIRCLEVILLE.—John A. Dodd, auditor of Pickaway county, is advertising for bids for the purchase of bridge bonds aggregating $284,000.

COLUMBUS.—Charles E. Firestone and O. H. Perry, formerly officials of the Columbus Buggy Co., now in the hands of receivers, are organizing a company for the manufacture of electrical vehicles, to be incorporated as the Columbus Electric Co., capital $50,000.

DAYTON.—The directors of the Dayton Ice Mfg. & Cold Storage Co. have voted to increase the capacity of its plant by the expenditure of $100,000.

DAYTON.—The Maxwell Motor Car Co. is planning to double its capacity, which will provide for an annual output of 10,000 cars. R. E. Baus, manager.

DAYTON.—The interests of B. H. Noyes in the Noyes Mfg. Co. have been purchased by J. A. Oswald and the name of the company changed to the Kidder-Oswald Co., the capital stock being raised to $200,000. The company will continue to manufacture machines and machine tools. Its plant is located at Fifth street and Norwood avenue. Walter S. Kidder has been elected president and J. A. Oswald, vice president and general manager.

ELYRIA.—F. L. Elmberger, clerk board of commissioners, Lorain county, will open bids July 31 for constructing the superstructure of West View bridge in Columbia township. Plans with the county surveyor.

KENTON.—Elmer J. Carey, auditor of Hardin county, is advertising for bids for

the purchase of bridge bonds aggregating $29,430.

LONDON.—H. M. Chaney, auditor Madison county, will open bids Aug. 2 for the construction of a steel bridge over Big Darby Creek, between Madison and Franklin counties.

MARIETTA.—The American Iron & Supply Co., founded 15 years ago by D. I. Rabinovitz and H. Appleman, has been sold to Louis Goldish of St. Paul, Minn.

PIKEVILLE.—The Seagraves Machine Works has been incorporated; $6,000; by H. Seagraves, J. P. Mumaw and V. Seagraves.

TROY.—County Auditor M. T. Staley is advertising for bids for the purchase of bridge bonds to the amount of $40,000.

TROY.—Joseph B. Studebaker, chairman board of commissioners Miami county, will open bids Aug. 5 for the construction of five bridges.

WARREN.—The county commissioners are planning to issue $65,000 worth of bonds to construct new bridges and culverts to replace those washed out or damaged by the March floods.

YOUNGSTOWN.—County Auditor L. M. Hogg will open bids July 28 for furnishing the structural steel to construct a temporary steel bridge 190 feet long, composed of two 95-foot trusses, over the Mahoning river at Division street. Plans with the county surveyor.

ZANESVILLE.—The Weidig Stove Foundry Co. is preparing plans for a plant for the manufacture of stoves. (Mentioned July 3.)

OREGON

DEE.—The mill of the Oregon Lumber Co. has been destroyed with a loss estimated at $400,000. One million feet of lumber and a large amount of equipment were consumed.

EUGENE.—The Eugene Woolen Mill Co. has appropriated $5,000 for new machinery.

PENDLETON.—The $200,000 bond issue for a water system has been sold and plans are under way to bring water from Thorne hollow.

PORTLAND.—The Electric Steel Foundry has been incorporated; $50,000; by Leonard Schad, C. W. Schad and G. F. Schott.

PORTLAND.—The Portland & Oregon City Railroad Co. has been incorporated to construct an electric line between the two cities. The capitalization is $200,000. T. C. Fletcher and Francis Vandermeer incorporators.

PORTLAND.—The Northwest Steel Co. is planning to build a new plant, upon which construction work will begin at once. The company is given until Feb. 1, 1914, to move from its present location, which was recently purchased by the public dock commission.

SUMPTER.—R. T. Langrell will build a 25,000 daily capacity saw mill on the S. S. Terrill ranch, which he has just purchased.

PENNSYLVANIA

ALTOONA.—The Penn Central Electric Light & Power Co. has awarded the contract for its new administration building to be erected at Union avenue and Eighteenth street to the Altoona Concrete Construction & Supply Co.

BARNESBORO.—The Cambria Coal Co. is planning improvements to its power house at the mines near this city. It is understood a 200-kilowatt motor generator set and three 75-kilowatt transformers will be installed.

ELIZABETHPORT.—The Ball-Wood Co. will offer at auction upon its premises July 22, a large assortment of heavy machine tools and other mechanical equipment, as it is moving its plant to another city. The equipment includes the following:

Fourteen American, Pond, Putnam, Gleason, McCabe, Bradford, Bogert and Lodge & Shipley screw cutting engine lathes, from 8 to 26 feet beds, 1¼ to 2-inch hollow spindles, swings 18 to 60 inch.

Six Woodward & Powell, Niles, Hewes & Phillips and Gray iron planers, from 36 x 32, 48 x 48, 56 x 56 and up to 120 x 96 inch, platens 12 to 26 feet.

Three Bement-Miles, Newton & Newark horizontal boring mills, capacity up to 14 feet x 52 inch traverse 60 inch.

Six Niles-Bement-Pond, Betts, Niles, Bridgeport and King vertical boring mills, 60 x 54 and up to 144 x 96 inch spindle traverse 24 to 60 inch.

Two Ingersoll combination horizontal and vertical milling machines, up to 42 x 26 inch, 15 foot platen.

Niles & Bickford radial drills, 4 to 5½ foot arms.

Five Barnes, Gould & Eberhardt and Prentice upright drills, 20 x 26 inch.

Bement-Miles slotting machine, 24 inch traverse.

Jones & Lamson and Gisholt turret lathes.

Morgan 60-pound and Seller's 600-pound steam hammers.

Five hand-operated traveling cranes, equipped with chain hoists.

PHILADELPHIA.—The Bell Telephone Co. has completed plans and is receiving bids for alterations and additions to 13 telephone buildings.

PHILADELPHIA.—Parvin & Co. have been awarded the contract for alterations to be made for the Philadelphia Electric Co. to a crane running at Twenty-eighth and Christian streets, at a cost of $11,000.

PHILADELPHIA.—The Electric Storage Battery Co. began work last week on a one-story power house at Nineteenth street and Allegheny avenue. The building will be 57 x 62 feet, and is estimated to cost $10,000.

PHILADELPHIA.—William E. Hopkin, George W. Sauerwein and James M. Henderson will make application to the governor of Pennsylvania on July 14 for a charter for an intended corporation, to be known as the Charles E. Hopkin Co., Inc., to manufacture, sell and install heaters and ranges.

PITTSBURGH.—The Henry R. Worthington Co. has placed an order with R. M. Rush, 2137 Oliver building, representative of the Kerr Turbine Co., Wellsville, N. Y., and the Falk Co., Milwaukee, Wis., for 16 steam turbines. The order includes eight 200-horsepower turbines with Falk herring bone reduction gears to drive circulating pumps, and eight 40-horsepower turbines direct connected to hot well pumps.

SCRANTON.—The Scranton Steam Pump Co. has been reorganized with a capital of $500,000. The assets of this company were recently sold at a receiver's sale.

SHARON.—The American Steel Foundries is constructing a new 25-ton open hearth furnace, designed to use powdered coal for fuel. The National Malleable Steel Castings Co. and the Sharon Steel Hoop Co. are reported to be using powdered coal for fuel in open hearth processes with success.

RHODE ISLAND

PROVIDENCE. — The Safety Engineering Co. has been incorporated to manufacture safety devices; $100,000; by Samuel Greer, Willard L. Hatch and Jesse A. Lutz.

TENNESSEE

CENTERVILLE.—An electric light plant will be established by the Buckeye Spoke Co., which has applied for a franchise. The company's office is at Bon Aqua, Tenn.

TEXAS

TEMPLE.—The Temple, Northwestern & Gulf railroad, formerly the Temple & Northwestern railroad, has placed orders for materials for the construction of 15 miles of line. W. E. Dozier, chief engineer, has also assumed the duties of general manager.

VIRGINIA

NORFOLK.—The Norfolk & Western Railway Co. is making improvements and extensions at Lamberts Point, including extensive coal handling facilities, all of which are estimated to cost $2,000,000. The work is expected to be completed by January, 1914.

WASHINGTON

BELLINGHAM. — The city council has named a committee to investigate the feasibility of erecting a hydro-electric power plant on the Nooksack river.

CENTRALIA.—The Olympia & South railroad has been incorporated for $100,000 to operate a steam or electric line from Olympia to Portland. The incorporators are B. H. Rhodes, of this city, and F. R. Brown, of Olympia.

CHEWALAH.—The Butte Chewalah mine will install a new hoist and compressor soon.

ISSAQUAH.—With the letting of the $100,000 contract to Link Belt Machinery Co. by the Issaquah & Superior Coal Mining Co. for new cleaning and preparing plant, it has been announced that the company will expend $300,000 in reopening mines here.

LAMONT.—President J. H. Young, of the Spokane, Portland & Seattle railroad, has announced that the work of rebuilding the company's burned shops at this point, will be taken up at once. The cost is estimated at $75,000.

REPUBLIC.—Extensive additions to buildings and equipment are being made by the North Washington Power Co. A new Corliss engine, air compressor and additional electric generators, and 150-horsepower boiler will be installed.

SEATTLE.—The Great Northern railway has awarded a contract for building two steel bridges and a mile and a half of snow sheds to the Grant Smith Co.

SEATTLE.—The Puget Sound Traction, Light & Power Co. has applied for a franchise for selling electric current in North Seattle, Kirkland and Redmond. The county commissioners have matter under advisement.

TACOMA.—The city will build five factory buildings on municipal property on water front for five new manufacturing concerns which have signed five-year leases.

VANCOUVER.—The brick plant of the Columbia Clay Co. has been sold to the Denny-Renton Clay & Coal Co., Hoge building, Seattle.

WEST VIRGINIA

GRAFTON.—The plant of the Thornton Fire Brick Co. three miles east of here, was destroyed by fire July 6. The plant will be rebuilt.

MORGANTOWN. — The Elkins Coal & Coke Co. will install a 200-kilowatt motor generator set in its plant at Bretz, W. Va.

WEIRTON. — The Weirton Development Co., a subsidiary of the Phillips Sheet & Tin Plate Co., has purchased 20 acres at Crawford's Crossing and has begun the erection of a score of small houses to provide accommodations for new residents. As previously mentioned, the Phillips Sheet & Tin Plate Co. has planned to add ten new tin mills to its plant at this city.

WHEELING.—Machinery is now being installed in the new plant of the Weirton

Steel Co., which is expected to be in operation by Sept. 1.

WISCONSIN

BELOIT.—The Stewart-Warner Speedometer Corporation, Chicago, has plans for a $60,000 addition to the Beloit works, formerly Warner Instrument Co., to be 120 x 392 feet, with saw-tooth roof.

JANESVILLE.—The common council has ordered a special election on the question of issuing $35,000 in bonds for the construction of a new bridge over Rock river at Milwaukee street.

JANESVILLE.—The factory committee of the Twenty Five Thousand Club is investigating a proposition from a concern manufacturing pressed steel parts for agricultural implements and springs for furniture and kindred articles, which desires to locate at Janesville. The plan contemplates the expenditure of $25,000 for a factory building. Frank Croak is chairman of the committee.

LA CROSSE.—The Hans Motor Equipment Co. advises 80 per cent of the equipment needed for its new plant now is being used by the company and the rest has been ordered. The new building will be used for making automobile equipment.

MENOMINEE.—The trustees of the Stout Institute, now under state control, are about to have plans prepared for a $50,000 addition to be devoted to vocational instruction. A complete manual training equipment will be needed. Loren D. Harvey is superintendent.

MERRILL.—The Merrill Iron Works is being operated day and night on a 24-hour schedule to execute its orders according to delivery specifications. The rush is due particularly to the big order for castings and machinery for the Whiting-Plover Paper Co. of Stevens Point. The shipment will comprise five carloads of machinery and one car of castings. The Merrill works recently made extensive improvements.

MILWAUKEE.—The Worden-Allen Co., Milwaukee, was awarded the contract for erecting a steel ice rink at Calumet, Mich., measuring 100 x 230 feet. It is to be completed by Dec. 25.

MILWAUKEE. — The Federal Pressed Steel Co. of Milwaukee, which is completing a large plant at Keefe avenue and North Pierce street, just north of the city limits, has increased its capital stock from $50,000 to $150,000.

MILWAUKEE.—Saxe Bros. Amusement Enterprises have plans for a $100,000 auditorium and theater building to be erected on Third street, between Grand avenue and Wells street. Contracts will be awarded about July 20.

MILWAUKEE.—The Wells Power Co., a public service corporation in the electric light and power field, has increased its capital from $100,000 to $200,000. Some important extensions, the nature of which is not yet available, will be made. Horace A. J. Upham, 927 Wells building, is president.

MILWAUKEE.—The department of public works, Fred G. Simmons, commissioner, will receive bids until July 19 for the construction of a single span bascule bridge over Milwaukee river at Buffalo street, including the substructure and superstructure, or separate. An appropriation of $175,000 is available for the work. The structure must be completed June 1, 1914. Bonds to accompany bids: For substructure, $23,400; for superstructure, $25,200; for entire structure, $48,600. This work has previously been noted in THE IRON TRADE REVIEW.

MILWAUKEE.—The department of public works is preparing to install equipment to utilize the waste steam from the municipal garbage incinerating plant to produce electric power for other municipal purposes and forming the nucleus of the proposed municipal electric light and power plant. Cost, $10,000. Oscar D. Kleinsteuber, superintendent of fire and police alarm system, is in charge.

PLYMOUTH.—The Plymouth Brewing Co. has been organized by J. E. Curtis, M. C. Mead, J. H. Goelzer and M. H. Hand to establish a brewing and malting plant here. Capital, $200,000.

MILWAUKEE.—The Allis-Chalmers Mfg. Co., Milwaukee, was the sole bidder for furnishing and installing a 12,000,000-gallon pumping engine in North Point pumping station of the municipal water-works system here, the bid being $74,200. The appropriation was $75,000 and the contract will be awarded to Allis-Chalmers. The Bethlehem Steel Co., South Bethlehem, Pa., made a bid, but this did not arrive until several hours after the time of closing bids. Another 12,000,000-gallon pump will be purchased in the spring of 1914. Fred G. Simmons is commissioner of public works and Jos. A. Mesiroff is city engineer.

RACINE.—The C. H. Driver & Kerr Co. has been incorporated to manufacture machinery, etc.; $25,000; by C. H. Drink, A. T. Kerr and M. E. Walker, all of Racine.

RACINE.—The Sterling Mfg. Co. has been incorporated with $10,000 capital to manufacture hardware and woodenware specialties. E. L. Osborn, Lew Powell and George H. Shurr are the principal stockholders.

RACINE.—The Racine Drop Forge Co., organized several weeks ago, as reported in The Iron Trade Review at the time, has been chartered as a corporation with a capital of $20,000. Adam and Peter Blackwood are the principal stockholders.

RACINE.—James N. Buelow, of Fond du Lac, Wis., is about to establish a shop at Racine for the manufacture of aeroplane devices. Mr. Buelow recently disposed of his rights on a non-tipping appliance to the Sloane Aeroplane Co., of Chicago, for $15,000 and is now perfecting several other devices.

SEYMOUR.—The Farmers Implement Co. has been incorporated to manufacture all kinds of machinery, etc.; $30,000; by L. H. Waite, E. J. McGeehan and W. Beck, all of Seymour.

SHEBOYGAN.—The Klumb Engine & Machine Co. expects to be able to commence operations in its plant on Aug. 15. The plant consists of three buildings, a machine shop, 40 x 100 feet, 20 feet high, of steel and brick; a pattern shop, 18 x 36 feet, and a boiler and engine room. The company will manufacture gasoline engines.

SHEBOYGAN.—The American Gas Engineering Co., organized several months ago with $50,000 capital to build gasoline engines, machinery and transact a general machinery business, has changed its name to Universal Oxygen Co. and will devote most of its attention to welding and cutting by the oxy-acetylene process. The company is spending about $20,000 in the construction and equipment of a complete plant at South Fourteenth street and the river and eventually will enlarge the shop to provide facilities for gasoline engine and machinery manufacture.

SUPERIOR.—The Great Northern Power Co. has increased its capital from $2,500,000 to $11,000,000 to extend its facilities and transmission lines. The company operates a large hydro-electric plant at Thompson, Minn., which provides current for Superior, Duluth and vicinity.

THREE RIVERS.—The D. & A. Post Mold Co. has moved into its new plant, recently made necessary by the rapid growth of its business.

WASHBURN. — A special session of the county board of supervisors has been called to appropriate sufficient funds for the construction of a steel bridge over Sioux river on Four Mile Creek road, to replace the wooden bridge condemned by the state highway commission.

WATERTOWN.—The proposition to organize a company to establish a malleable iron plant here, which was temporarily abandoned last fall, has been revived and a public meeting will be held July 18 to discuss and decide upon the matter. E. J. Vanderboom, E. Ward and H. Kreitner, of Milwaukee, are pushing the proposition, which contemplates a $100,000 corporation. Mr. Kreitner submitted a statement to the Watertown people who are interesting themselves, which on the basis of a 2,000 ton per annum production would show a net profit of about $25,000 above the usual 7 per cent deduction. Otto Beifeld, of Watertown, is chairman of the local committee.

WAUKESHA. — The Bartles-Shepard Oil Co., capital $40,000, has been organized here by Aubrey G. Maguire, J. H. Marshutz and Albert U. Stetten. Mr. Maguire is a resident of Milwaukee and one of the principal owners of the Bartles-Maguire Oil Co.

DOMINION OF CANADA

ALBERTA

CALGARY.—P. Burns Coal Mines, Ltd., advises it has been incorporated for holding during development only, and permanent plans have not been mapped out.

EDMONTON.—The New York Continental Jewell Co. has been awarded the contract for an addition to the filtration plant at a cost of $117,000.

EDMONTON.—Tenders are being called for a new Canadian Northern railway station at South Edmonton with an iron covered freight shed. The total cost will be $40,000.

LETHBRIDGE.—The Canadian Pacific railway has taken out a building permit for the construction of a new freight shed to cost $20,000, work on which will be commenced in a week's time.

LETHBRIDGE. — The Athabasca & Grande Prairie railway has been incorporated to build a railway from the junction of the Athabasca and Solomon rivers northeasterly to the junction of the Smoky and Muskeg rivers and on to Dunvegan, Alta.

BRITISH COLUMBIA

VANCOUVER.—The Bridge River Co., composed of Vancouver interests, proposes to develop a big waterpower at Bridge river at a cost of $8,000,000. The powerhouse will be forty miles from the Canadian Northern and Canadian Pacific lines at Lytton, B. C.

VANCOUVER.—Following an organization meeting of the construction company it is announced that the bridge proposed to be built across the Second Narrows of Burrard Inlet, Vancouver, B. C., will cost $2,225,000; will have a clear headway of 45 feet and will be 64 feet wide, providing space for a single track steam railway, a roadway with double track for electric cars; and an 8-foot sidewalk. It will be built on six piers. The three principal spans will have a total length of 1,045 feet. Two of them will be fixed spans of 232 feet each and the central

Penton's Book News

Publishers and Book Handlers

CLEVELAND

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PENTON'S BOOK NEWS

CLEVELAND

swing span will be 581 feet long, revolving at the center.

NEWFOUNDLAND

ST. JOHN.—The Reid Newfoundland Co. has ordered 6,000 tons of steel rails, construction work having been started on its Trepassey branch line. The company has been authorized to build a line from Broad Cove to Heart's Content and a branch line along the north shore of Conception Bay to Grate's Cove.

ST. JOHN.—The Canadian North Atlantic Corporation has been authorized to build a railway from the eastern boundary of Canadian Labrador through Newfoundland Labrador to Cape St. Charles as part of a line which is projected to run from Quebec City. The company has been granted 6,000 acres of land a mile in aid of construction. On completion of this line the company plans a branch to a point between Badore Bay and Cape St. Charles, to operate a car ferry therefrom to the Newfoundland coast and to build a railway thence to connect with the Newfoundland system.

NOVA SCOTIA

SYDNEY.—The following sums will be expended on Intercolonial railway construction and betterments: new terminal facilities at Halifax, N. B., $2,500,000; second track from Chaudiere Junction to St. Romauld, Que., $173,000; improvements at Levis, Que., $160,000; locomotive and car shops at Moncton, N. B., with equipment, $136,000; car ferry and dock at Mulgrave, N. S., $460,000; improvements at Point Tupper, N. B., $90,000; additional facilities at Riviere du Loup, Que., $28,000; diversions at Sydney Mines, N. S., $40,000; increased accommodation and facilities at 19 points on the line and contingencies, $126,000; increased accommodation at Truro, N. S., $155,000; spur to Wallace Harbor, $69,500; to increase water supply, $41,500.

ONTARIO

GUELPH.—Stevenson & Malcolm, Ltd have been incorporated to carry on business as plumbers', steam and gas fitters' and electricians' and manufacture supplies and appliances; $30,000; Andrew Malcolm, Charles L. Dunbar and Robert S. Clark.

OTTAWA. — The Transcontinental Power Corporation, Ltd., with headquarters at Toronto has been incorporated at $10,000.

OTTAWA. — The department of public works is preparing contract plans for the improvement of the French river, connecting Lake Nipissing with the Georgian bay, at a cost of $600,000.

OTTAWA.—Orders have been received by the Ottawa Car Co. for two double truck locomotive type snow sweepers for the Ottawa Electric railway and three single truck snow sweepers for the British Columbia Electric railway.

OTTAWA.—Tenders have been called until July 29 by the Department of Railways and Canals for a steel pontoon gate lifter for the Trent Canal. Plans and specifications may be seen at the office of the chief engineer of the Department at Ottawa.

OTTAWA.—In connection with the expenditure which is to be made on the St. Lawrence ship channel it is announced that the following sums will be spent on equipment: Elevator dredges with tugs, $270,000; one new steel elevator rock dredge with tug, $45,000; one new steel elevator rock dredge with tug, now under construction, $45,000; one new self propelling steel elevator dredge with tug, being built by contract, $25,000; one hydraulic dredge with two tugs, $118,000; two suction hopper dredges, one tug and one self propelling hopper barge, $150,000; two dipper dredges with tugs, $80,000; two inspection and sweeping tugs, $36,000; two stone lifters and one floating shop, $15,000; one rock cutter, $10,000; for outfitting, docking and providing extra parts for dredging fleet, $100,000.

PORT ARTHUR.—The Port Arthur & Fort William Electric railway has ordered four double truck and five single truck pay-enter cars from the Ottawa Car Co. They will be of all steel underframe construction with monitor roof and 45 feet in length.

TORONTO.—The Canadian Northern will build another new line in Ontario from Parry Sound to Callendar, Ont. Five bridges over as many streams along the route will be necessary, the longest requiring a deck span of 100 feet and about 300 feet of trestle approach. The line will not be started this year.

TORONTO.—The British America Nickel Corporation, Ltd., one of the largest incorporations of the kind announced for some years, has been incorporated at Ottawa with $20,000,000 authorized capital. It has powers to prospect for and develop nickel, gold, silver, copper, coal, salt, iron and other mines, to treat such products by electrolytic and other processes and to develop and sell power.

TORONTO.—Provision for the accommodation of 60 ocean freighters will be made by the Toronto Harbor Commissioners in connection with the proposed construction of a viaduct. A large amount of machinery for loading and unloading purposes will be installed at these slips. Dredging is to be carried out in Toronto Bay at this point, an expenditure of $5,000,000 being involved under all these heads.

QUEBEC

MONTREAL.—Drummond, McCall & Co. advise recent incorporation will make no change in the business. The company is a jobbing concern.

MONTREAL.—The city council is contemplating the expenditure of $13,500 for the purchase of motor sweepers for cleaning the roads; of $6,820 to purchase a vacuum cleaner; and a sum sufficient to procure a motor water cart.

MONTREAL.—The Canadian Metal Mfg. Co., Ltd., has been incorporated to manufacture and install heating and ventilating apparatus and metal roofing; $30,000; by Frederick W. Montgomery and John K. Wells of Boston, Mass., Lloyd Everett Urquhart, of Montreal and others.

MONTREAL.—The plans of the Montreal Tramways Co. involve the reconstruction of almost the whole system within the next few years. One hundred and sixteen pound rails with 132-pound guard rails on a concrete roadbed 21 inches thick will be the standard specification for future work.

MONTREAL.—Additions will be made to the Angus shops of the Canadian Pacific railway at a cost of $500,000. The additions will be made to the passenger and freight car shops, locomotive and upholstering shops, pattern storage building, maintenance, general office and power house buildings.

QUEBEC.—The St. Lawrence Bridge Co. has ordered four steel underframe flat cars of 40 tons capacity and four pairs of trucks, 50 tons capacity, from the Canadian Car & Foundry Co.

QUEBEC.—Work will shortly be started on the construction of the public works promised for Quebec City and which include the building of a tunnel from Wolfe's Cove to St. Malo to connect with the Union passenger station; workshops for the National Transcontinental railway at St. Malo; a grain elevator at Priest's Wharf; docks and a passenger and freight depot.